OKI

MICROLINE
790/791

Printer Handbook

Important Safety Instructions

Your OKI printer has been carefully designed to give you years of safe, reliable performance. As with all electrical equipment, however, there are a few basic precautions you should take to avoid hurting yourself or damaging the unit:

- Read the setup and operation instructions in this manual carefully. Be sure to save it for future reference.

- Read and follow all warning and instruction labels on the printer itself.

- Unplug the printer before you clean it. Use only a damp cloth; do not use liquid or aerosol cleaners.

- Place your printer on a firm, solid surface. If you put it on something unsteady, it might fall and be damaged; if you place it on a soft surface, such as a rug, sofa, or bed, the vents may be blocked, causing it to overheat.

- To protect your printer from overheating, make sure no openings on the printer are blocked. Don't put the printer on or near a heat source, such as a radiator or heat register. If you put the printer in any kind of enclosure, make sure it is well ventilated.

- Do not put anything into the ventilation slots on the sides of printer, you could get a shock or cause a fire.

- The printhead can get quite hot when it has been printing for a length of time. Do not touch the printhead untill it has had a chance to cool off.

- Do not use your printer near water, or spill liquid of any kind into it.

- Be certain that your power source matches the rating listed on the back of the printer. If you're not sure, check with your dealer or with your local power company.

- Your printer has a grounded plug as a safety feature, and it will only fit into a grounded outlet. If you can't plug it in, chances are you have a non-grounded ontlet; contact an electrician to have it replaced with a grounded outlet. Do *not* use an adapter to defeat the grounding.

- To avoid damaging the power cord, don't put anything on it or place it where it will be walked on. If the cord becomes damaged or frayed, replace it immediately.

- If you're using an extension cord or power strip with the printer, make sure that the total of the amperes required by all the equipment on the extension is less than the extension's rating. Generally, the total ratings of all equipment plugged into any one power line should not exceed 15 amperes. Don't exceed this unless you know that the power line your equipment is plugged into has a rating above 15 amperes.

- Aside from the routine maintenance described in this handbook, don't try to service the printer yourself; opening the cover may expose you to shocks or other hazards. Don't make any adjustments other than those outlined in the manual – you might cause damage requiring extensive repair work.

- If anything happens that indicates that your printer is not working properly or has been damaged, unplug it immediately and follow the procedures in Chapter 5. These are some of the things to look for:

  The power cord or plug is frayed or damaged.

  Liquid has been spilled into the housing, or the printer has been exposed to water.

  The printer has been dropped or its cabinet has been damaged.

  The printer doesn't function normally when you're following the operating instructions.

- Screen jitter on your CRT may occur in an environment where the space between your printer and CRT is narrow (200 mm or less). In such cases, open up the space.

Contents

Introduction

This Guide is arranged to help you get your new MICROLINE 790 or 791 printer set up and running quickly as well as providing you with more detailed information for future reference. Here's how it's organised:

- Chapter 1 (Installation) shows you how to get your printer ready to run and how to connect it to your computer.

- Chapter 2 (Loading Paper) explains how to load paper for any of the two methods of paper feed.

- Chapter 3 (Operation) describes how to control your printer from the front panel. It also explains how to change the defaults, how to test your printer and how to use bar codes.

- Chapter 4 (Working with Software) gives you information on selecting a driver and installing your printer on popular software packages.

- Chapter 5 (Problem Solving/Maintenance/Service) gives helpful hints on how to solve common printer problems and how to maintain your printer in tip-top shape.

- Appendices A through E contain a variety of reference material, including specifications, menu listings, lists of printer programming commands and ASCII characters.

Chapter 1: Installation

This chapter explains how to unpack and install your new printer.

Unpacking

Unpack your printer and make sure you have the following items. If you are missing any of these items, contact your dealer immediately for a replacement.
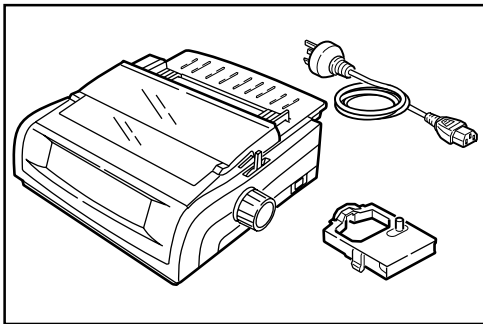
- Printer

- Ribbon cartridge

- AC cord

    $\left(\begin{array}{l}\text{It is not included in case of}\\\text{some models.}\end{array}\right)$

- Printer Handbook & Software on CD-ROM.

    ➡ *Interface cable and paper are sold separately.*

Removing Shipping Retainers

Tab
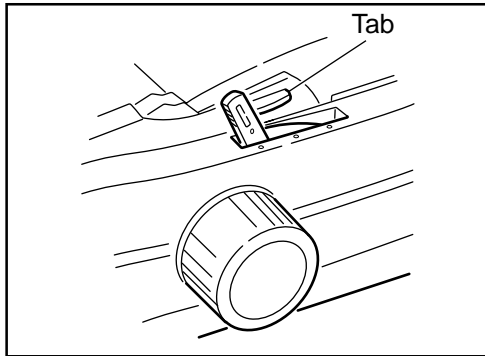
1. Open access cover by grasping tabs at either end and lifting.
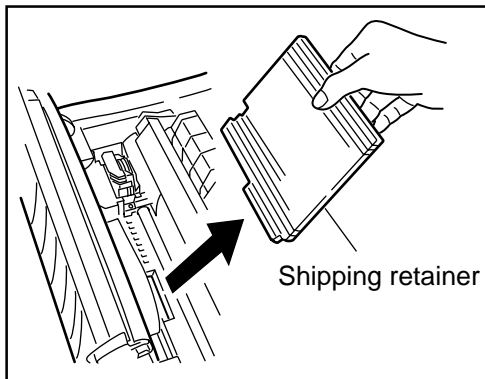
Shipping retainer

2. Remove printhead shipping retainer (leave cover open for installation of ribbon).

Knob
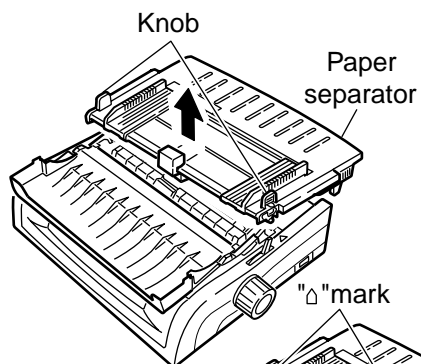
Paper separator

3. Hold the knob and remove the paper separator.

"∆"mark
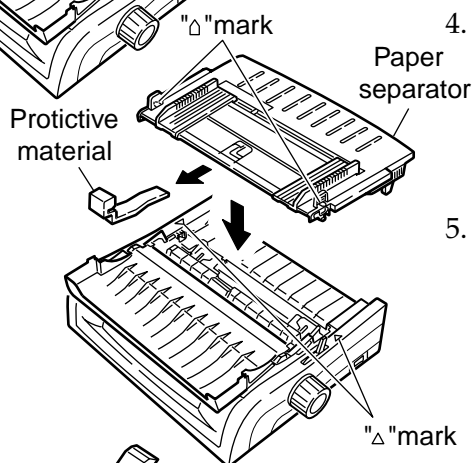
Paper separator

4. Remove the protective material.

Protictive material
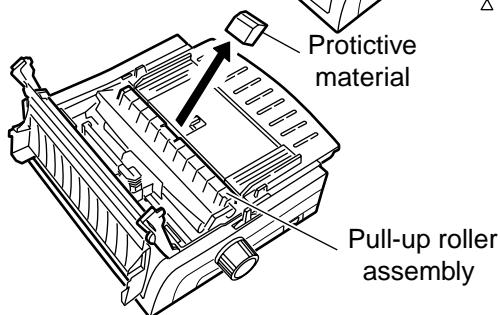
5. Set and attach the post to the "∆" mark of the upper cover and the paper separator.

"∆"mark

Protictive material

6. Remove the protective material from the pull-up roller assembly.

Pull-up roller assembly

Installing Ribbon Cartridge

Center printhead on platen
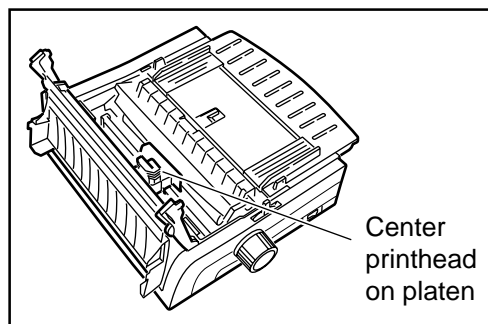
1. With access cover open, grasp printhead and slide it until it is centered on platen.

2. Remove ribbon cartridge from its packaging.

Important! Leave the clear plastic ribbon shield on the cartridge!
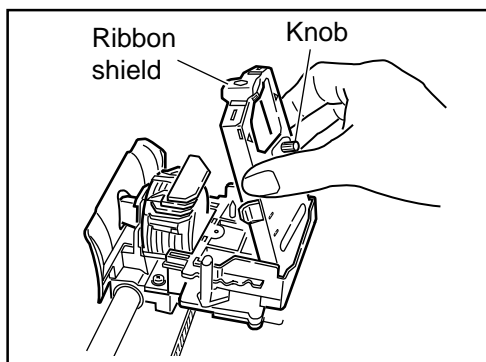
Ribbon shield   Knob

Setting	Headgap lever position	Number of sheets
1	1	1
2	2	2
3	3	3
4	4	4
5	5	envelopes or extra-thick paper

Printhead

Knob

Headgap lever
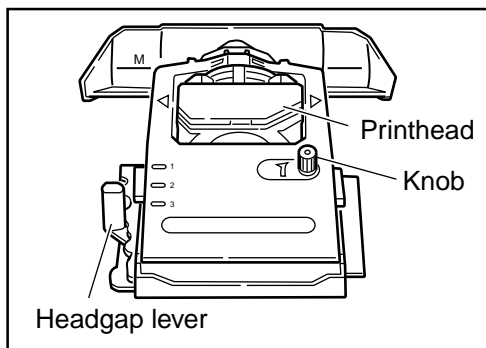
3. Holding ribbon cartridge with knob facing up and ribbon sheild facing platen, fit grooves on either side at back end of cartridge over pins on ribbon plate.

4. Lower front of cartridge over printhead until it snaps into place, then turn knob in direction of arrow (clockwise) to take up ribbon slack.

5. The headgap lever by the side of cartridge adjusts for different paper thicknesses. Set it for the number of sheets in the forms you're using from 1 to 4; use setting 5 for envelopes or extra-thick paper. Adjust the setting up or down for the best print quality.

Note: When the setting is set at 2~5, the printer automatically slows down for better print quality with thicker multipart forms.

Important! Be sure to use only ribbons specifically for use with MICROLINE 790 series.
For best results, use genuine OKI ribbons.

Making Connections

Connection with Computer

There instructions are for the standard parallel interface and USB interface. Instructions for installation/connection of a serial interface are included with the serial interface accessory. For more information on the serial interface accessory, see Chapter 5.

Pin assignments for the parallel, USB and the serial interfaces are listed in appendix E.

You must supply the cable for connecting your printer to your computer.

a. In the case of parallel interface cable
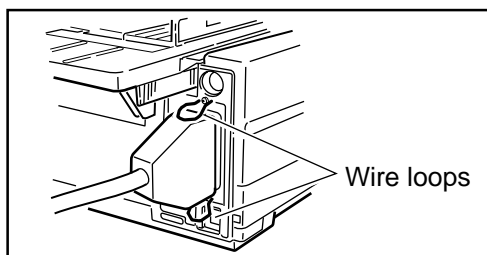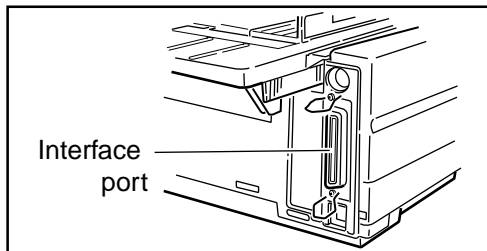
1. Make sure both printer and computer are OFF.

2. Locate interface port on back of printer.

Interface port

3. Plug parallel interface cable into port and secure it in place with wire loops.

Wire loops

b. In the case of USB interface cable
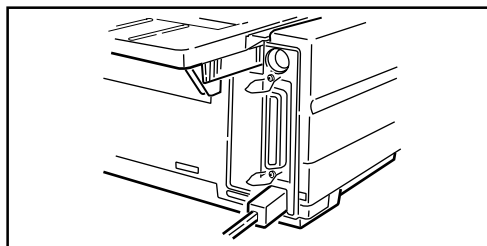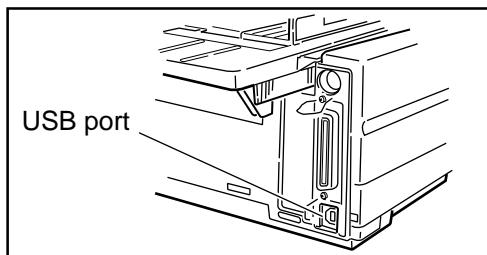
1. Make sure both printer and computer are OFF.

2. Locate interface port on back of printer.

USB port

3. Plug USB interface cable into port.

Connection with Power
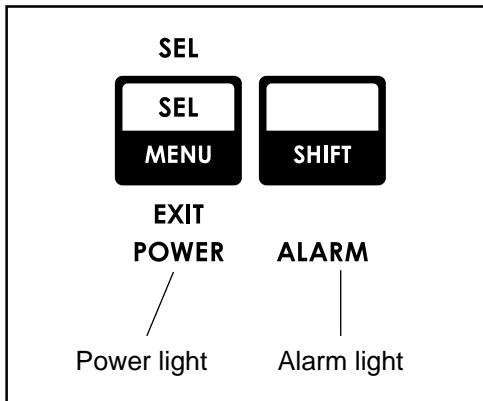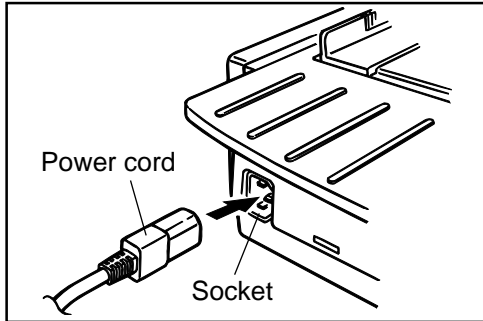
1. Make sure both printer and computer are OFF.

2. Plug power cord into back of printer. Plug other end into grounded outlet.

Power cord

Socket

3. Turn printer on. Printhead will cross back and forth along platen, and POWER light will come on. ALARM light will also come on, but don't be concerned: it's just telling you that there is no paper loaded.

SEL

SEL
MENU

SHIFT

EXIT
POWER   ALARM

Power light   Alarm light

You're now ready to load paper—proceed to Chaper2.

Chapter 2: Loading Paper

Your printer has provision for single-sheet paper feed from the top and for continu-ous-form paper feed from the rear. You can also install options: the Cut Sheet Feeder, which holds a stack of 100 sheets for feeding from the top and the Push and/or Pull Tractors for feeding continuous-form labels, heavy card stock or multi-part forms from the bottom. See Chapter 5 for more information on these options.

Top Feed

- Single sheets (basis weight 14 to 24 lbs)

- Single envelopes
  – 24-lb maximum
  – 6.5" to 9.5" wide

- Transparencies (8.5 x 11")

Rear feed (continuous forms only, thickness to 0.014" [0.36 mm])

- Single-part continuous forms
  – 12 to 24 lb.
  – Minimum 3" wide (*[1])

- Carbonless, multi-part forms
  – Original, plus 3 copies
  – 9 to 11 lb
  – Minimum 3" wide (*[1])

- Interleaf, multi-part forms (with carbon paper)
  – Original, plus 4 copies
  – 10 to 12 lb paper, with 9 lb carbon
  – Minimum 3" wide (*[1])

(*[1]) Please change mentioned below centering Position within a set-up group fol-lowing indication of 32 pages when a form of 3" wide is used by Rear Feed.

In the case of ML790 "Mode 1".

In the case of ML791 "Mode 2".

Bottom feed (continuous forms only, thickness to 0.017″ [0.44mm])

- Single-part continuous forms
  – 12 to 24 lb
  – Minimum 3″ wide (*²)

- Carbonless, multi-part forms
  – Original, plus 4 copies
  – 9 to 11 lb
  – Minimum 3″ wide (*²)

- Interleaf, multi-part forms (with carbon paper)
  – Original, plus 4 copies
  – 10 to 12 lb paper, with 9 lb carbon
  – Minimum 3″ wide (*²)

- Continuous-feed envelopes
  – 24 lb maximum
  – 6.5″ to 9.5″ wide (envelope itself)

- Labels
  – minimum 3″ wide (*²)
  – maximum 10″(ML790) or 16″ (ML791) wide

- Card stock: papers up to 120 lb maximum

(*²) Please change mentioned below centering Position within a set-up group following indication of 32 pages when a form of 3″ wide is used by Bottom Feed.

In the case of ML790 "Mode 1".

In the case of ML791 "Mode 2".

Loading Single-Sheet Paper

The single-sheet paper path is best for letterhead stationery, memos, and envelopes. We also recommend it for printing graphs and charts because it provides the most accurate control of the paper.

To load in single sheets of paper:

If you have any continuous-form paper in the paper path, you must press the PARK button on the front panel to remove it from the path before lading single sheets.
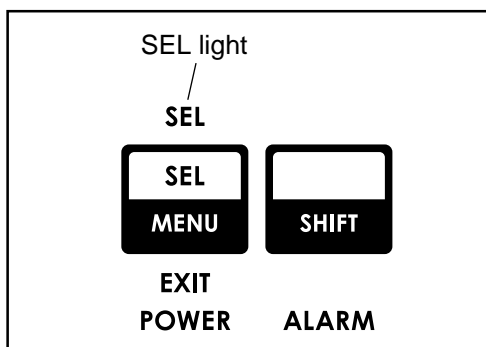
1. Make sure printer is turned ON and deselected (SEL light off – press SEL button to deselect it necessary).

   The ALARM light will remain on until paper is loaded.

2. Move paper lever to position marked "TOP".
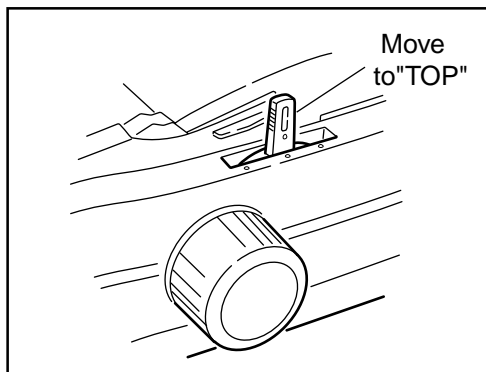
Wire feed guide
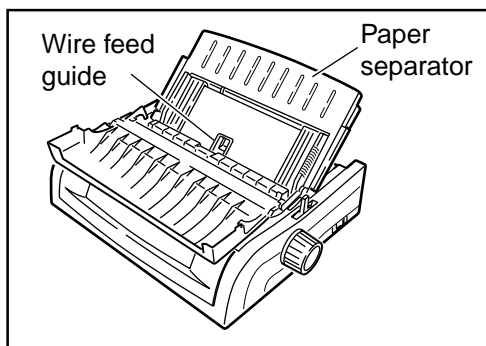
Paper separator

3. Grasp back of paper separator and un-snap it from housing, then swing it up into single-sheet feed position, making sure that wire feed guide is nestled in separator.
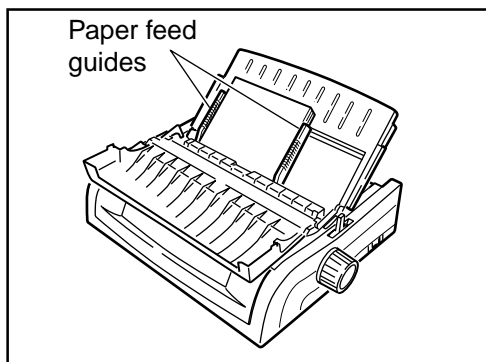
Paper feed guides

4. Adjust paper feed guides for width of paper and drop sheet of paper into separator. Paper will automatically feed into printer.

Flashes

SHIFT

15

PROP

RESET

ALARM
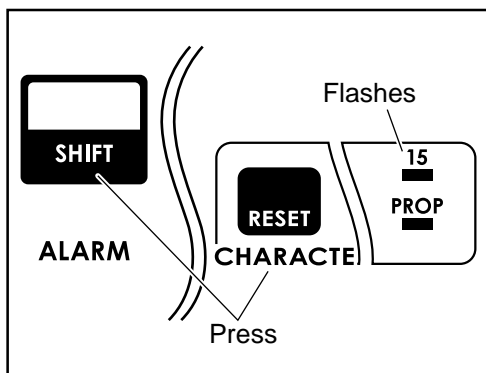
CHARACTE

Press

If the sheet of paper doesn't feed in properly, the "15" light in the Character Pitch section at the bottom right of the control panel will begin flashing. To correct this, press the SHIFT and RESET buttons simultaneously, then reload the sheet.
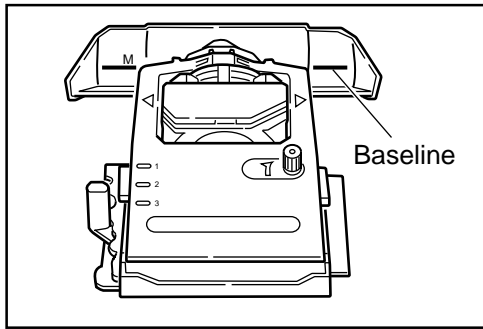
Baseline

5. Baseline for Top of Form (TOF) on paper is indicated by red line on clear plastic paper shield.

Hold

Press to feed paper down in micro increments

SEL

SEL
MENU

SHIFT

LF
Micro Feed Down

FF/LOAD
Micro Feed Up

EXIT
POWER

ALARM

GROUP

ITEM

Press to feed paper up in micro increments
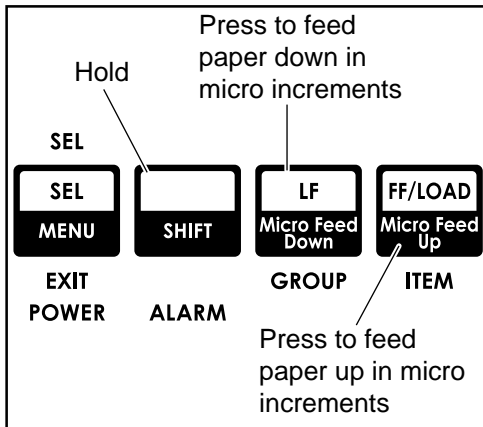
6. If desired, change TOF setting using control panel:

☞ to set TOF further down on page, hold SHIFT button while pressing FF/LOAD button: this will advance paper up in micro increments

☞ to move TOF further up on page, hold SHIFT button while pressing LF button: this will advance paper down in micro increments

7. Press SEL button (SEL light will come on).

SEL

SEL
MENU

EXIT
POWER
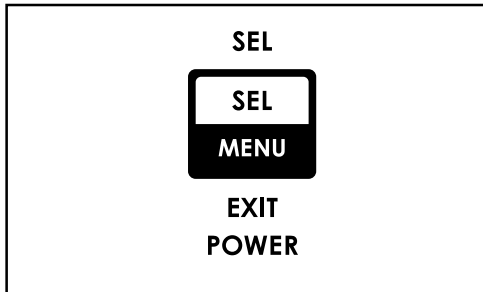
Loading Rear-Feed Paper

The rear-feed paper path is recommended for single-thickness, continuous fan-fold paper when printing spreadsheets, long reports, etc. For graphics or charts, it's best to use the single-sheet paper path.

To load continuous-form paper from the rear:

1. If you have paper in paper path, be sure to remove it before installing rear-feed paper. To remove single sheet, press FF / LOAD button. To remove bottom-feed paper, press PARK button.
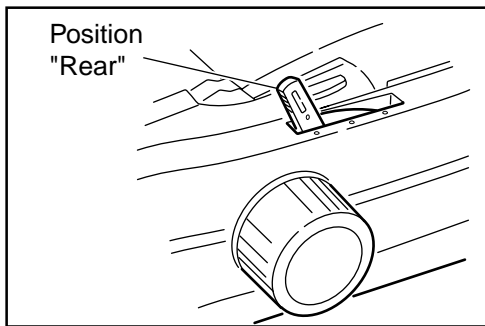
2. Move paper lever to position marked "REAR".
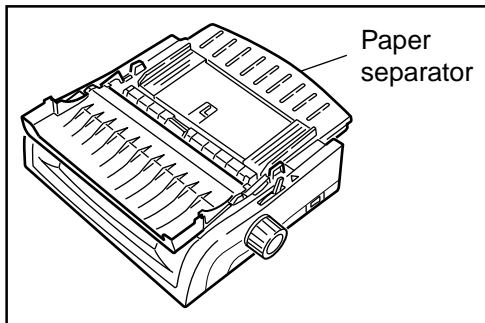
3. Open the access cover.
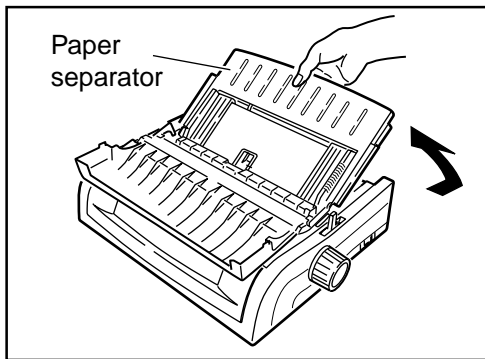
4. Hold up the middle part of the paper separator and pull upwards.
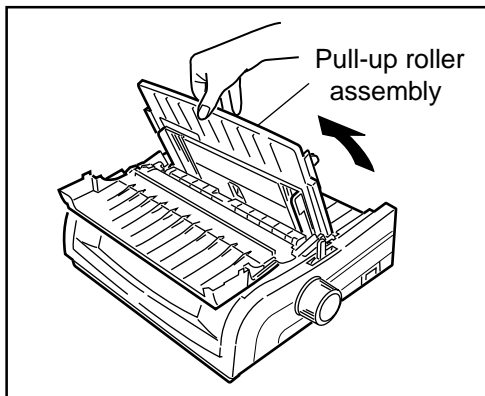
5. Rotate the paper separator forward and stand against pull-up rolller assembly.

6. Locate tractors.

Lock lever   Tractor cover
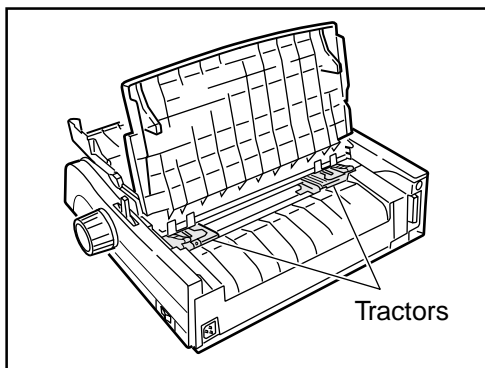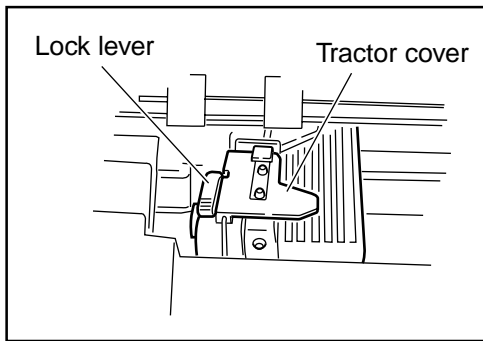
7. Pull up on lock levers to release tractors. Position right-hand tractor for width of paper you're loading.

➡ *The movement of the left tractor is limited to ensure that the paper will always contact the paper sensor when loaded.*

Paper separator
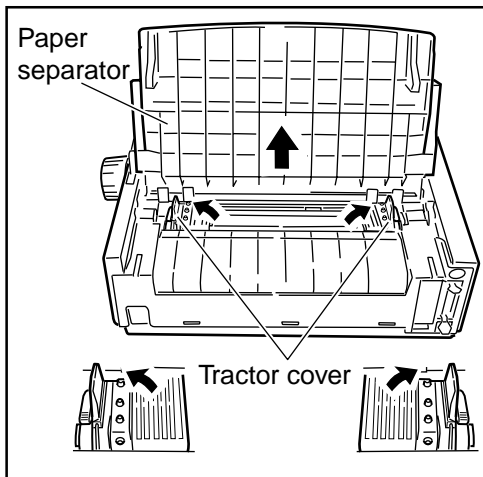
Tractor cover

8. Open the tractor cover, and raise the paper separator.
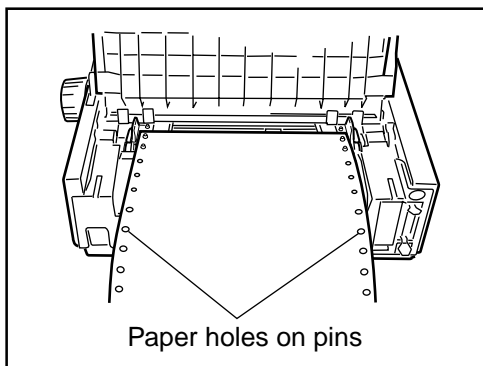
Paper holes on pins

9. Pull paper, and place first two holes on each side over tractor pins.
Please note that an equal number of paper holes must be engaged on either tractor in order to ensure proper paper feed.

Paper separator

Upper cover
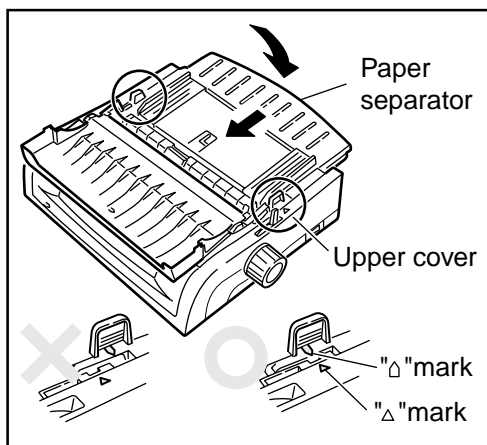
"△"mark

"△"mark

10. Replace the paper separator and insert until the paper separator and upper cover marks align.
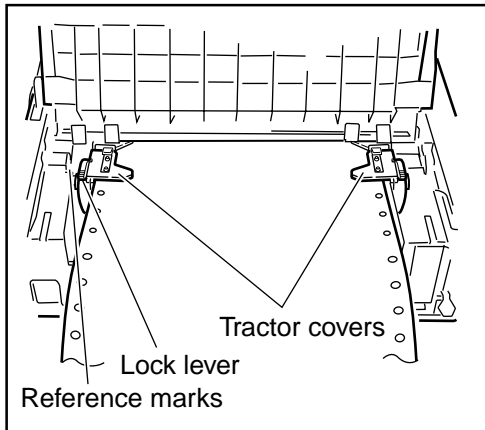
11. Close tractor covers and adjust left tractor to position edge of paper: reference marks on printer indicate left edge position for the two most common paper sizes. When paper is properly aligned, lock left tractor in place by pushing back on lock lever.

12. Adjust right tractor so that paper holes are centered on pins(careful – if paper is stretched too tight or left too loose, it can jam and cause problems), then lock right tractor in place by pushing back on lock lever.

Tractor covers
Lock lever
Reference marks
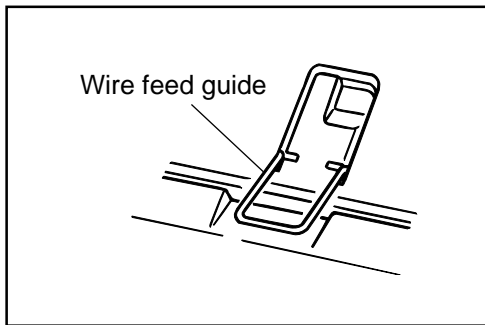
13. Set Paper separator and swing wire feed guide over to rest on pull-up roller assembly to prevent from curling back into printer.

Wire feed guide

FF/LOAD
Micro Feed Up

ITEM
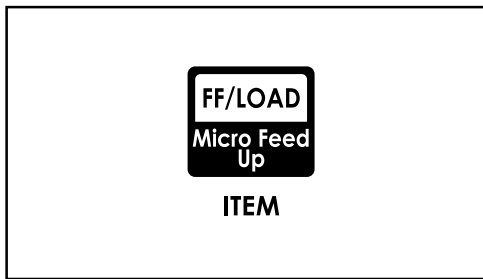
14. Push FF/LOAD button. Paper will automatically feed into printer and ALARM light will go out.
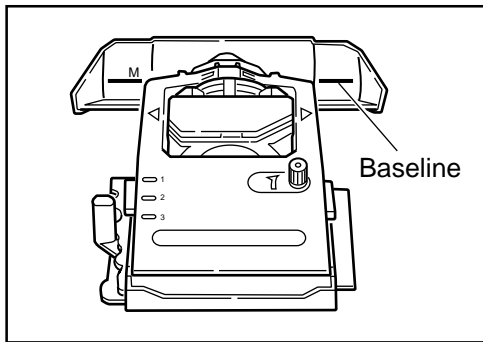
Baseline

M

1
2
3

15. Baseline for top of Form(TOF) on paper is indicated by red line on clear plastic paper shield.

Press to hold the paper before releasing the TEAR button.

Press to bring the paper down to the print position.

LF
Micro Feed Down

FF/LOAD
Micro Feed Up

TEAR

SHIFT

GROUP   **ITEM**   **SET**

ALARM   **MENU**
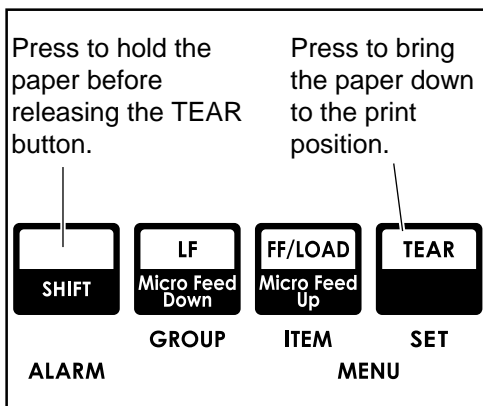
16. If desired, change TOF setting using control panel:

If form tear off is being selected in the printer menu, press the TEAR button to bring the paper down to the print position. Hold down the SHIFT button and release the TEAR button.

☞ to set TOF further down on page, hold SHIFT button while pressing FF/LOAD button: this will advance paper up in micro increments

```
                Press to feed
                paper down in
        Hold    micro increments

        SEL
```

☛ to move TOF further up on page, hold SHIFT button while pressing LF button: this will advance paper down in micro increments

```
        SEL             LF      FF/LOAD
       MENU    SHIFT  Micro Feed Micro Feed
                        Down      Up

        EXIT            GROUP    ITEM
       POWER    ALARM

                Press to feed
                paper up in micro
                increments
```

```
                SEL

                SEL
               MENU

                EXIT
               POWER
```
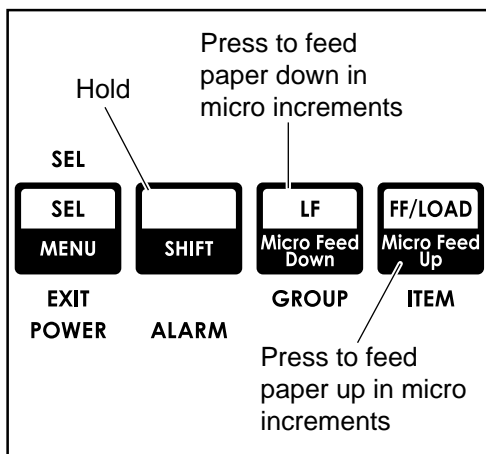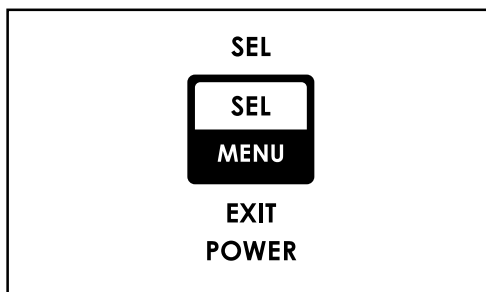
17. Press SEL button (SEL light will come on).

```
                LF
             Micro Feed
               Down

              GROUP
```
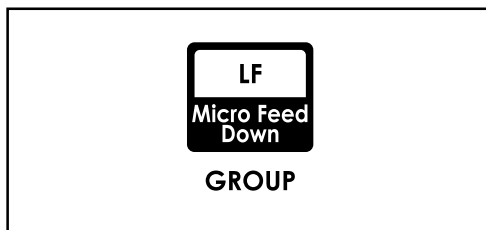
☛ *To temporarily change the Top of Form setting for a particular print job, deselect the printer and press the LF button until you reach the TOF position you want to use. The printer will retain this setting until you turn it off.*

Paper Handling

Your printer has several handy paper handling features:

- Tear
- Form Tear-off
- Paper Park

Tear Feature

When you're using continuous forms with either the built-in rear-feed tractor or the optional bottom-feed push tractor, you can use this feature to advance the forms up to the tear position so you can easily tear off a printed sheet without wasting paper or readjusting the printer. To do this, simply press the TEAR button on the front panel.

```
                                        Press
                                          |
     SEL                                            ▬
   ┌───────┐ ┌───────┐ ┌──────────┐ ┌──────────┐ ┌──────┐ ┌──────┐ ┌───────┐
   │  SEL  │ │       │ │    LF    │ │ FF/LOAD  │ │ TEAR │ │ PARK │ │ QUIET │
   │ MENU  │ │ SHIFT │ │Micro Feed│ │Micro Feed│ │      │ │      │ │  TOF  │
   │       │ │       │ │   Down   │ │    Up    │ │      │ │      │ │       │
   └───────┘ └───────┘ └──────────┘ └──────────┘ └──────┘ └──────┘ └───────┘
     EXIT                 GROUP         ITEM        SET     PRINT
   POWER      ALARM                        MENU
```
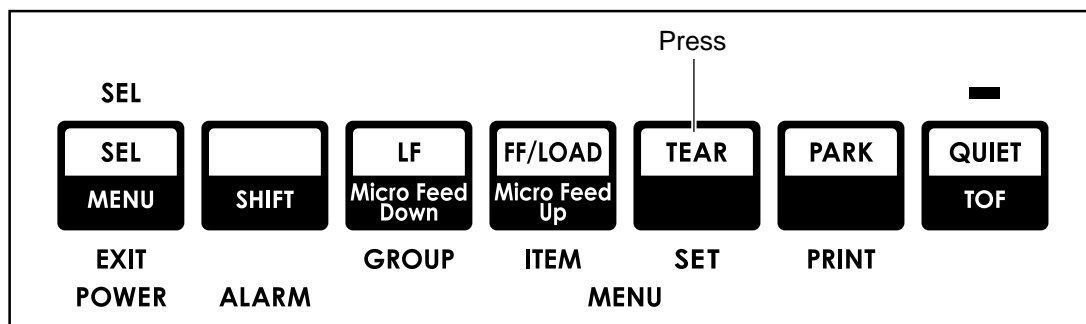
 The tear feature can not be used when the optional pull tractor is installed.

Forms Tear-off Feature

Caution! Do not engage Forms Tear-off when printing on labels!

The Forms Tear-off feature can be engaged to automatically move the paper up to the tear position after the selected interval (500 milliseconds, one second, or two seconds). The page will stay in the tear-off position until the printer receives data. It will then move down to the initial printing position.

This feature is normally turned off. To activate it, enter the printer menu (see *Menu Mode* in Chapter3) and choose one of the intervals.

Some programs, such as high resolution graphics packages, pause occasionally while sending data to the printer. If the pause lasts more than the selected interval, the paper will advance to the tear-off position until more data is received. No data will be lost, but this extra paper movement can cause uneven print registration in graphics. If you have this problem, use the menu to deactivate Forms Tear-off.

Paper Park Feature

If you have continuous-form paper loaded and you wish to switch to another paper path, first tear off the printed pages, then simply press the PARK button. The continuous-form paper will immediately retract from the paper path.
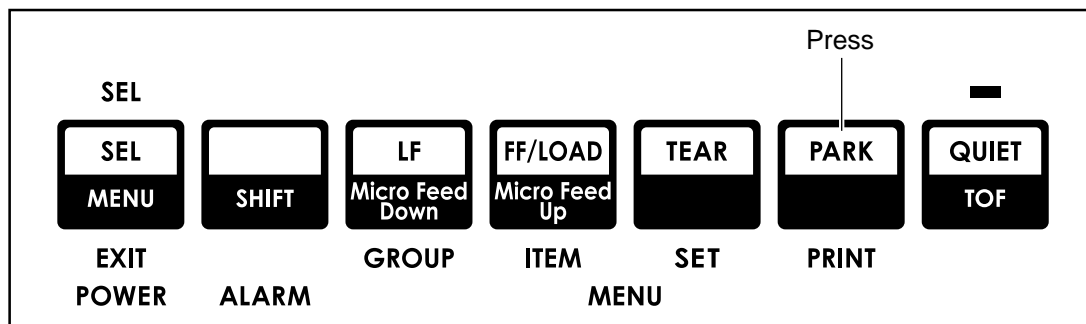
Switching Paper Paths

To switch from continuous-form feed from the rear or bottom (optional push or pull tractor installed) of the printer to single-sheet feed from the top:

1. Tear off printed pages.
2. Press PARK button.
3. Swing wire guide up into paper separator, then pivot separator to upright position.
4. Move paper lever to position marked "TOP".
5. Load single sheet paper into paper separator.

To switch from top feed to continuous-form tear or bottom (optional push or pull tractor installed) feed:

1. Make sure no sheet is in paper path (press FF/LOAD to remove single sheet from path).
2. Lower paper separator to continuous forms position and swing wire guide over onto pull-up roller assembly.
3. Move paper lever to position marked "REAR" or "BOT", as appropriate.
4. Press FF/LOAD button. Continuous-form paper will advance into print position.

Chapter 3: Operation

This chapter explains how to operate your printer. It also provides instructions on how to change the default settings and how to perform basic tasks, including selecting typeface/print quality, selecting character pitch, testing your printer, and resetting Top of Form to the factory default.

Control Panel
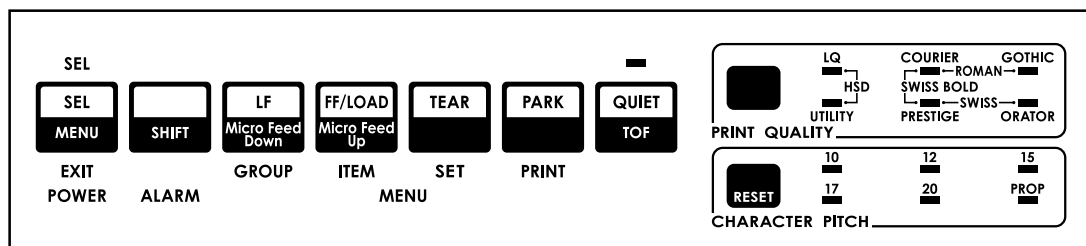
Your printer's front panel lets you control paper feeding, customize your printer's defaults to your particular needs, and select print quality and character pitch.

Here's a breakdown of the controls on the front panel:

```
           SEL                                                        ▬

         ┌──────┐ ┌──────┐ ┌──────┐ ┌────────┐ ┌──────┐ ┌──────┐ ┌──────┐
         │ SEL  │ │      │ │  LF  │ │ FF/LOAD│ │ TEAR │ │ PARK │ │QUIET │
         ├──────┤ │SHIFT │ │Micro │ │ Micro  │ │      │ │      │ ├──────┤
         │ MENU │ │      │ │Feed  │ │ Feed   │ │      │ │      │ │ TOF  │
         └──────┘ └──────┘ │Down  │ │ Up     │ └──────┘ └──────┘ └──────┘
                           └──────┘ └────────┘
           EXIT              GROUP      ITEM       SET     PRINT
         POWER      ALARM                      MENU
```
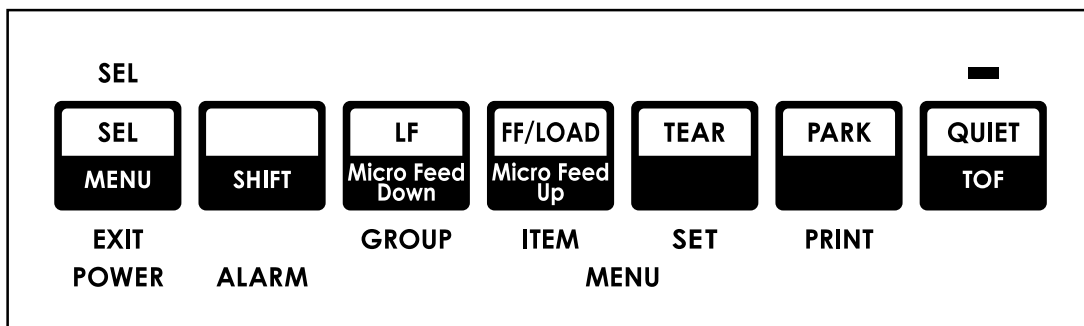
The seven buttons to the left on your control panel are multi-function buttons. In routine printer operation, they are used to manipulate the paper, but you can also use them to enter and make changes in the printer's program menu.


```
                   LQ            COURIER    GOTHIC
        ┌─────┐            ┌──■◄─ROMAN─►■
        │     │     HSD    │  SWISS BOLD
        │     │            └──■◄─SWISS─►■
        └─────┘    UTILITY    PRESTIGE   ORATOR
        PRINT  QUALITY

                   10        12        15
        ┌─────┐    ■         ■         ■
        │RESET│    17        20        PROP
        └─────┘    ■         ■         ■
        CHARACTER  PITCH
```
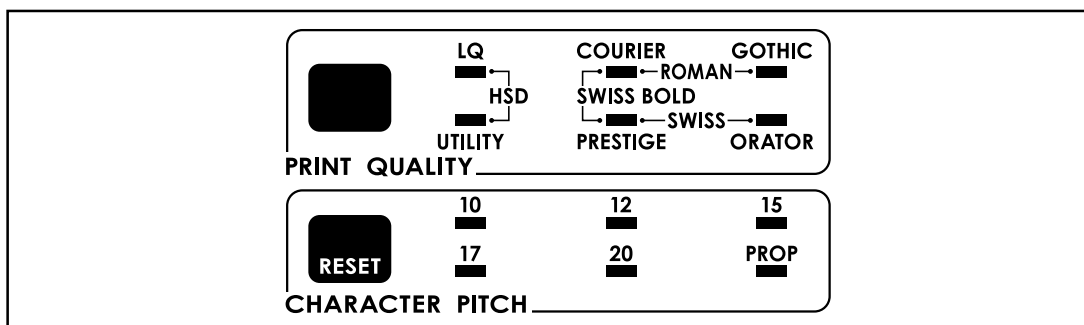
The PRINT QUALITY and CHARACTER PITCH sections at the right on the front panel are used to select the quality and size of the printing. See "Performing Basic Tasks" later in this chapter for information on how to use these buttons.

Important! The print quality and character pitch set by means of the front panel can be overridden by commands sent by the commercial software package from which you're printing a document. If you run into this problem, see Chapter 5 for information on how to correct it.

Print Mode

In its normal operating state, your printer's front panel is in the Print Mode.

Indicator Lights

In the Print Mode, your printer has the following lights to indicate its status:
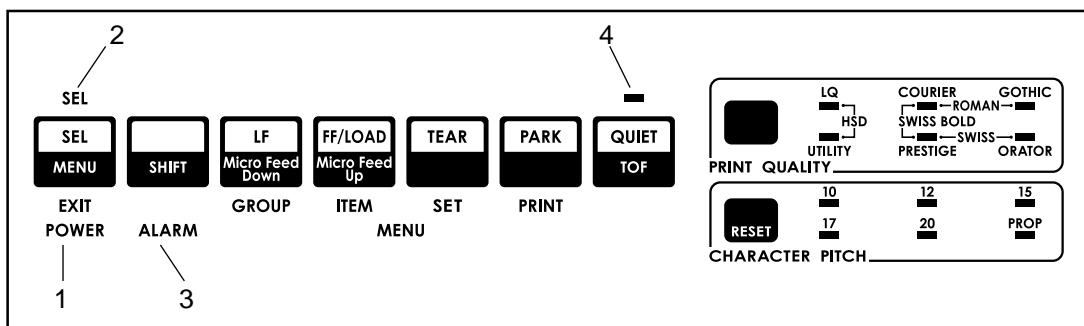
1. **POWER light:** Glows whenever printer is on.

2. **SEL light:** Glows when printer is selected, ready to receive data. Flashes when the printer is in print suppress mode or power saving mode. Goes out when printer is deselected (can't receive data).

3. **ALARM light:** Glows when error condition exists, such as out of paper or paper jam. Also glows when paper lever is set to wrong position.

Important! If the ALARM light is blinking, an unrecoverable error condition exists. Try turning the printer off, then on again; if the light is still flashing, contact your service dealer (see Chapter 5 for more information on obtaining service).

4. **QUIET light:** Glows when printer is in QUIET state (printer selected or deselected).

Buttons
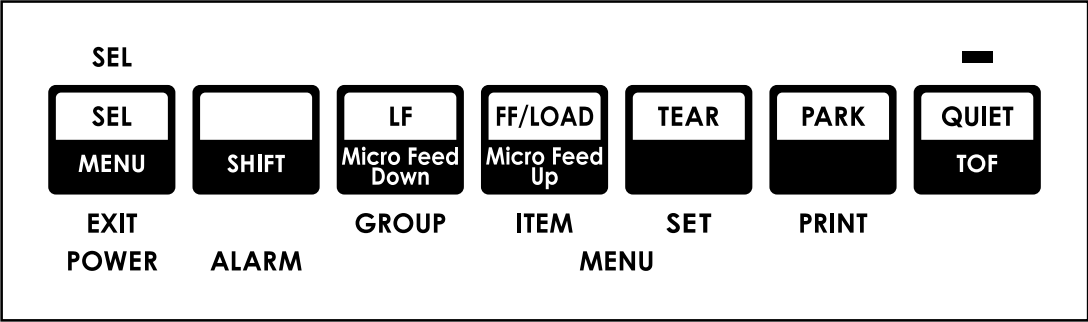
When the printer is selected (SEL light on), only the functions marked at the top of the bank of buttons (LF, FF/LOAD, TEAR, PARK, QUIET) are in effect. When the printer is deselected (SEL light off), the functions marked at the bottom of the buttons (Micro Feed Down, Micro Feed Up, TOF) can be accessed by means of the SHIFT button.

Each button can have several functions, depending on the mode in use (Print Mode or Menu Mode), on whether or not the printer is selected and on whether or not the optional Cut Sheet Feeder (CSF) is installed. Most buttons also have a different function if they are pressed while the printer is being turned on. In addition, different combinations of two buttons can be used to access functions.

The various function available for each button are summarized in the table below.

> *The PRINT QUALITY and CHARACTER PITCH buttons are discussed under "Performing Basic Tasks," later in this chapter.*

Summary of Front Panel Button Functions

Button	Print Mode	Help on Power Up	With CSF Installed	Menu Mode
SEL	Selects/deselects printer. Resets Paper Out of Paper Jam Alarm. Also ends Font Test or Rolling ASCII test .	Activates Menu Mode.	Same as Print Mode	Resets Paper Out Alarm.
SEL + SHIFT	Activates Menu Mode.	Activates Menu Mode.	Same as Print Mode	Exits Menu Mode.
SHIFT	With printer deselected: used with other keys to set and store Top of Form.	N/A	Same as Print Mode	N/A
LF	Advances paper Up one line. Press and hold to advance by repetitive line feeds.	Activates Font Test.	Same as Print Mode	Advances to next Group in Menu.
LF+ SHIFT	With printer deselected, moves Top of Form setting up (paper moves down) on page in micro increments.	Activates Font Test.	Same as Print Mode	Goes back to previous Group in Menu.
FF/LOAD	Feeds in sheet of paper or advances continuous-form paper to print position.	N/A	Inserts or Ejects Page.	Advances to next Item in Menu.
FF/LOAD +SHIFT	With printer deselected, moves Top of Form setting down (paper moves up) on page in micro increments.	N/A	Same as Print Mode	Goes back to previous Item in Menu.
TEAR	Moves continuous-feed paper up for tear-off or back down for printing (select/deselect states).	N/A	N/A	Advances to next Value in Menu.

N/A : Not applicable.

Button	Print Mode	Help on Power Up	With CSF Installed	Menu Mode
TEAR+ SHIFT	Move the print head to Reverse.	N/A	Move the print head to Reverse.	Goes back to previous Value in Menu.
PARK	Parks continuous-form paper.	N/A	Ejects paper.	Prints list of all Menu settings for current emulation.
PARK+ SHIFT	Move the print head to Forward.	N/A	Move the print head to Forward.	Prints current Group Menu Setting.
QUIET	Activates/deactivates QUIET mode.	Activates Rolling ASCII Test.	Activates/deactivates QUIET mode.	N/A
QUIET+ SHIFT	Sets Top of Form.	Activates Rolling ASCII Test.	Sets Top of Form.	N/A
PRINT QUALITY	Selects next Print Quality mode.	N/A	Selects next Print Quality mode.	N/A
PRINT QUALITY +SHIFT	Sets/Resets Incremental Print mode.	N/A	Sets/Resets Incremental Print mode.	Prints all Menu settings, regardless of emulation/options engaged.
CHARAC-TER PITCH	Selects next pitch setting.	N/A	Selects next pitch setting.	N/A
CHARAC-TER PITCH+ SHIFT	With printer deselected, resets printer.	N/A	With printer deselected, resets printer.	N/A
FF/LOAD +TEAR	N/A	Resets Menu and Top of Form to factory default.	N/A	N/A

N/A : Not applicable.

Button	Print Mode	Help on Power Up	With CSF Installed	Menu Mode
SEL+LF	N/A	Resets Menu to factory default.	N/A	N/A
QUIET+ PARK	N/A	Resets Top of Form to factory default.	N/A	N/A
SEL+ FF/LOAD	N/A	Activates hex dump mode.	N/A	N/A

N/A : Not applicable.

Menu Mode

When your printer is in the Menu Mode, you can use the front panel controls to change the defaults for the printer parameters, including emulation, page length, line spacing, typeface, pitch, etc. For example, you might want to change the page length to 14 inches if you're printing on legal-size documents, or to 3 inches if you're printing on labels or small cards.

To place your printer in the Menu Mode, hold the SHIFT button while pressing the SEL button (printer either selected or deselected). The MENU light will come on and, if the printer was selected, the SEL light will go out.

To exit the Menu Mode, hold the SHIFT button and press the SEL button. The MENU light will go out and the SEL light will come on.

Sample Menu

The menu is made up of groups of parameters. Within each group is a list of items and each of those items has several possible settings. Here's a sample Menu printout. The first column lists the groups; the second, items; the third, settings:

```
Printer Control     Emulation Mode              EPSON LQ

Font                Print Mode                  LQ Courier
Font                Pitch                       10 CPI
Font                Proportional Spacing        No
Font                Style                       Normal
Font                Size                        Single

Symbol Sets         Character Set               Set I
Symbol Sets         Language Set                American
Symbol Sets         Zero Character              Slashed
Symbol Sets         Code Page                   USA

Rear Feed           Line Spacing                6 LPI
Rear Feed           Form Tear-Off               Off
Rear Feed           Skip Over Perforation       No
Rear Feed           Page Width                  13.6 "
Rear Feed           Page Length                 11 "

Bottom Feed         Line Spacing                6 LPI
Bottom Feed         Form Tear-Off               Off
Bottom Feed         Skip Over Perforation       No
Bottom Feed         Page Width                  13.6 "
Bottom Feed         Page Length                 11 "

Top Feed            Line Spacing                6 LPI
Top Feed            Bottom Margin               Valid
Top Feed            Page Width                  8 "
Top Feed            Page Length                 11 2/3 "
Top Feed            Wait Time                   1 sec
Top Feed            Page Length Control         by MENU Setting

Set-Up              Graphics                    Uni-directional
Set-Up              Receive Buffer Size         64K
Set-Up              Paper Out Override          No
Set-Up              Print Registration 1        0
||||||||||||||||||||||||||  SET    |||||| SHIFT+SET ||||||||||||||||||||||||||
                           <------         ------>
Set-Up              Print Registration 2        0
||||||||||||||||||||||||||  SET    |||||| SHIFT+SET ||||||||||||||||||||||||||
                           <------         ------>
Set-Up              Operator Panel Function     Full Operation
Set-Up              Reset Inhibit               No
Set-Up              Print Suppress Effective    Yes
Set-Up              Auto LF                     No
Set-Up              Time Out Print              Valid
Set-Up              Auto Select                 No
Set-Up              Graphics Speed              Low
Set-Up              Centering Position          DEFAULT
Set-Up              CSF Type                    Wide
Set-Up              Power Saving                Enable
Set-Up              Power Save Time             5 min

Parallel I/F        I-Prime                     Buffer Print
Parallel I/F        Pin 18                      +5v
Parallel I/F        Auto Feed XT                Invalid
Parallel I/F        Bi-Direction                Enable


Printer Control     Emulation Mode              EPSON LQ
```

Summary of Menu Settings

The table below details the entries in the printer Menu as it comes from the factory. The defaults are in **bold face italic** type.

Other entries will appear in the Menu depending on what options you have installed and what emulation is engaged.

For a complete listing of all the available Menu selections, along with explanations for each setting, see appendix B.

Group	Item	Setting
Printer Control	Emulation Mode	***Epson LQ***, IBM PPR, IBM AGM
Font	Print Mode	***LQ Courier***, LQ Roman, LQ Swiss, LQ Swiss Bold, LQ Orator, LQ Gothic, LQ Prestige, Utility, HSD
	Pitch	***10 cpi***, 12 cpi, 15 cpi, 17.1 cpi, 20 cpi
	Proportional Spacing	***No***, Yes
	Style	***Normal***, Italics
	Size	***Single***, Double
Symbol Sets	Character Set	***Set I***, Set II
	Language Set	***American***, French, German, Britishi, Danish I, Swedish, Italian, Spanish I, Japanese, Norwegian, Danish II, Spanish II, Latin American, French Canadian, Dutch, Publisher
	Zero Character	***Slashed***, Unslashed
	Code Page	***USA***, Canada French, Multilingual, Portugal, Norway, BRASCII, Abicomp, Multilingual 858, ISO 8859-15
Rear Feed	Line Spacing	***6 LPI***, 8 LPI
	Form Tear-Off	***Off***, 500 ms, 1 sec, 2 sec
	Skip Over Perforation	***No***, Yes
	Page Width*	***13.6"***, 8"
	Page Length	***11"***, 11 $^2/_3$", 12", 14", 17", 5", 3", 3.5", 4", 5.5", 6", 7", 8", 8.5"

* ML791 only

Group	Item	Setting
Bottom Feed	Line Spacing	*6 LPI*, 8 LPI
	Form Tear-Off	*Off*, 500 ms, 1 sec, 2 sec
	Skip Over Perforation	*No*, Yes
	Page Width *	*13.6″*, 8"
	Page Length	*11″*, 11 $^2/_3$", 12", 14", 17", 5", 3", 3.5", 4", 5.5", 6", 7", 8", 8.5"
Top Feed	Line Spacing	*6 LPI*, 8 LPI
	Bottom Margin	*Valid*, Invalid
	Page Width *	*8″*, 13.6"
	Page Length	11", *11 $^2/_3$″*, 12", 14", 17", 3", 3.5", 4", 5.5", 6", 7", 8", 8.5"
	Wait Time	*1 sec*, 2 sec, 500ms
	Page Length Control	*by Menu Setting*, by Actual Page Length
Set-Up	Graphics	*Bi-directional*, Uni-directional
	Receive Buffer Size	*64K*, 128K, 1 Line, 32K
	Paper Out Override	*No*, Yes
	Print Registration 1	*0*, 0.05 mm Left, 0.10 mm Left, 0.15 mm Left, 0.20 mm Left, 0.25 mm Left, 0.25 mm Right, 0.25 mm Right, 0.15 mm Right, 0.10 mm Right, 0.05 mm Right
	Print Registration 2	*0*, 0.05 mm Left, 0.10 mm Left, 0.15 mm Left, 0.20 mm Left, 0.25 mm Left, 0.25 mm Right, 0.25 mm Right, 0.15 mm Right, 0.10 mm Right, 0.05 mm Right

Group	Item	Setting
Set-Up	Operator Panel Function	*Full Operation*, Limited Operation
	Reset Inhibit	*No*, Yes
	Print Suppress Effective	*Yes*, No
	Auto LF	*No*, Yes
	Auto CR *1	*No*, Yes
	SI Select Pitch (10 CPI) *1	*17.1 CPI*, 15 CPI
	SI Select Pitch (12 CPI) *1	*20 CPI*, 12 CPI
	Time Out Print	*Valid*, Invalid
	Auto Select	*No*, Yes
	Graphics Speed	*Low*, High
	Centering Position	*DEFAULT*, MODE 1, MODE 2
	CSF Type *	*Wide*, Narrow
	Power Saving	*Enable*, Disable
	Power Save Time	*5 min*, 10 min, 15 min, 30 min, 60 min
Parallel I/F	I-Prime	*Buffer Print*, Buffer Clear, Invalid
	Pin 18	*+5V*, Open
	Auto Feed XT *2	*Invalid*, Valid
	Bi-Direction	*Enable*, Disable

* ML791 only
*1 IBM mode Only
*2 EPSON mode Only

Menu Mode Indicator Lights

In the Menu Mode, the following lights indicate your printer's status:
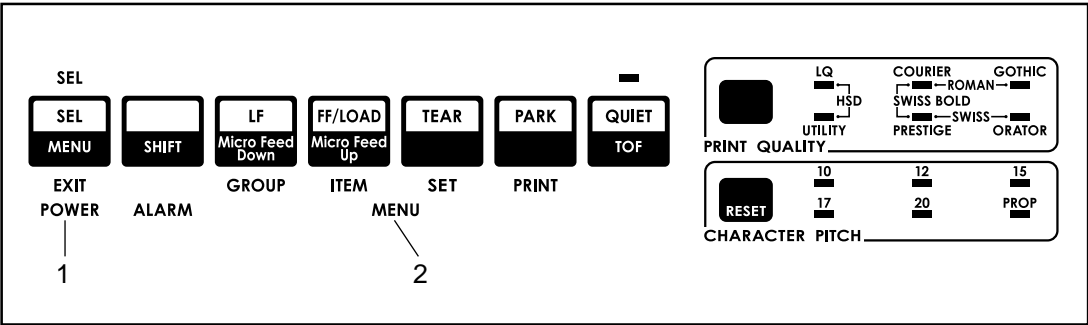
1. **POWER light:** Glows when printer is on.
2. **MENU light:** Glows when printer is in Menu Mode.

Menu Mode Buttons
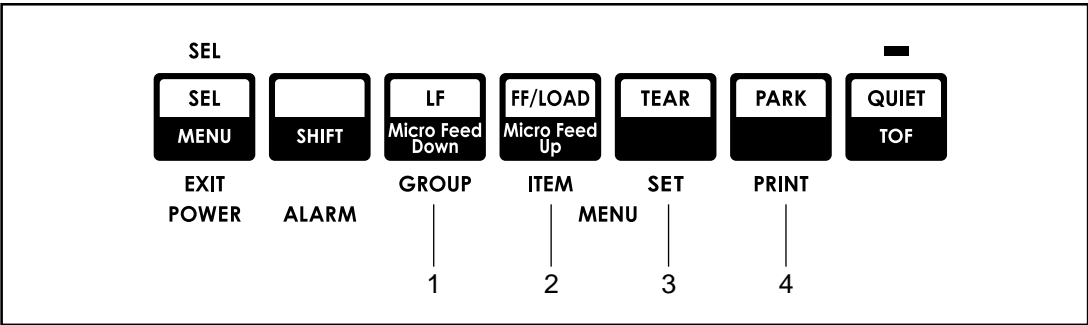
Here is a summary of the buttons active in the Menu Mode:

1. **GROUP button:** Press to scan through groups of listings. Each time you press the GROUP button, a line will print, showing the next group in the Menu. To go back one group, hold the SHIFT button while pressing the GROUP button.

2. **ITEM button:** Press to scan through items for a particular group. Each time you press the ITEM button a line will print, showing the next item within the group. To go back one item, hold the SHIFT button while pressing the ITEM button.

3. **SET button:** Press to change setting for the items. Each time you press the SET button, a line will print across the page showing the next setting for that item. Keep pressing the button until the setting you wish to engage appears. To go back one setting, hold the SHIFT button while pressing the SET button.

4. **PRINT button:** Press to print out listing of current settings for each items, group by group.

Resetting Menu to Factory Defaults

To reset your printer Menu to the factory settings, turn the printer off, then hold the SEL and LF buttons while turning it back on again.
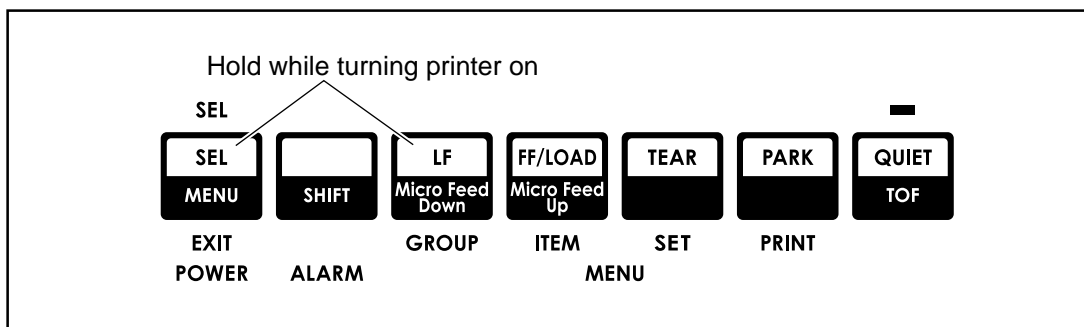
Performing Basic Tasks

Selecting Print Quality

Print quality button

LQ   COURIER   GOTHIC
                  ROMAN
        HSD   SWISS BOLD
                    SWISS
        UTILITY   PRESTIGE   ORATOR
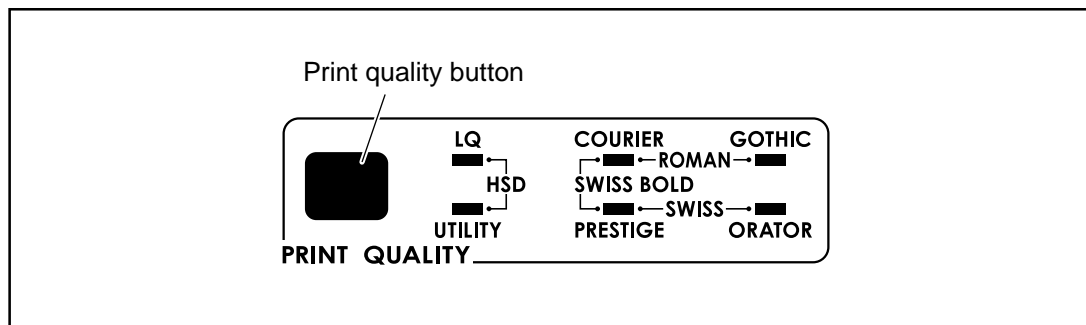
PRINT QUALITY

Your printer allows you to select from three print qualities: HSD, utility and letter quality (LQ), HSD and Utility printing are in the Gothic typeface. The LQ printing is of noticeably higher quality and offers you a choice of seven typefaces: Courier, Gothic, Prestige, Orator, Swiss Bold, Roman and Swiss. To select the print quality / typeface you want, keep pressing the PRINT QUALITY button until the lights are lit beside the combination you want. The LQ Roman, LQ Swiss Bold and LQ Swiss typefaces are selected when the lights on either side are both lit.

For example, to select the LQ Roman typeface, press the PRINT QUALITY button until the following lights appear:

☞ *Your printer also prints any of eight different bar codes accessible through printer commands. For more information on bar codes, see the end of this chapter.*

Selecting Character Pitch

Character Pitch button
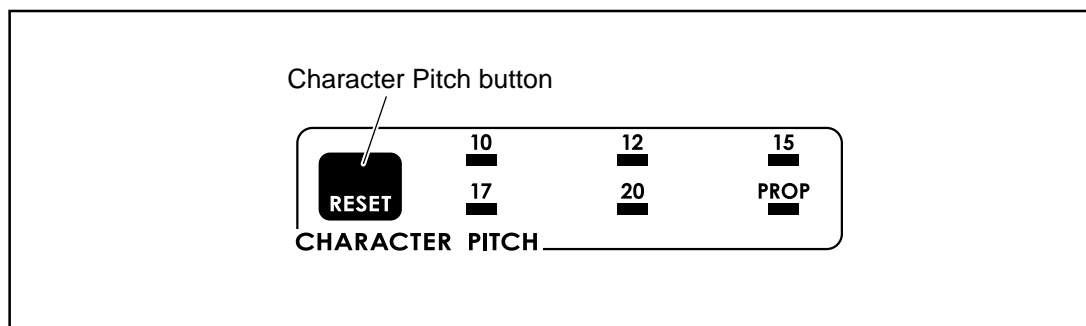
The character pitch determines the width of the individual characters and is measured in characters per inch (cpi). To select the character pitch, press the CHARAC-TER PITCH button successively until the light underneath the pitch you wish to engage is lit (10 cpi, 12cpi, 15cpi, 17cpi, 20cpi, or Proportional).

To reset the pitch to the user default (Menu Setting):

1. Be sure printer is deselected (SEL light out). If not, press SEL button.
2. Hold SHIFT button while pressing CHARACTER PITCH button.

If the SI command is received from your software, the character pitch selected on the control panel will be overridden by the SI command.

The table below summarizes the fonts available from your printer:

Typeface	Spacing	Style
LQ Courier	10 cpi	Normal, superscript, subscript
	12 cpi	Normal, superscript, subscript
	Proportional	Normal, superscript, subscript
	8 point	Normal
LQ Letter Gothic	10 cpi	Normal
	12 cpi	Normal
	Proportional	Normal
LQ Prestige	10 cpi	Normal
	12 cpi	Normal
	Proportional	Normal
LQ Orator	10 cpi	Normal
	12 cpi	Normal
	Proportional	Normal
LQ Roman	10 cpi	Normal, superscript, subscript
	12 cpi	Normal, superscript, subscript
	Proportional	Normal
	8 point	Normal
LQ Swiss	10 cpi	Normal, superscript, subscript
	12 cpi	Normal, superscript, subscript
	Proportional	Normal
	8 point	Normal
LQ Swiss Bold	10 cpi	Normal
	12 cpi	Normal
	Proportional	Normal
Utility Gothic	10 cpi	Normal, superscript, subscript
	12 cpi	Normal, superscript, subscript
HSD Gothic	10 cpi	Normal
Barcode	Code 39	N/A
	UPC A, UPC E, EAN 8, EAN 13, Interleaved 2 of 5, Code 128, Postnet	
Scalable fonts' (LQ Courier, LQ Roman< LQ Swiss)	11 point~ 64 point	Normal

Testing Your printer

Your printer has three your can run: the Font Test, the Rolling ASCII Test, and the Hexadecimal Dump Test.

Font Test

The Font Test provides a printout containing samples of available typefaces. Here's a portion of a Font Test printout:

To run the Font Test:

1. Be sure paper is loaded.

2. Turn off printer.

3. Hold LF button for several seconds while turning printer on. (IF printer simply turns on without starting to print, you didn't hold down LF button long enough.)

Rolling ASCII Test

The Rolling ASCII Test produces a continuous printout of all ASCII characters. The printing will continue until you stop it manually by pressing the SEL button. Here's a sample portion of a Rolling ASCII Test:

```
ML790      IE  P   F/W 00.53   42028101YR-01
                   CG  10.10
 !"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmno
!"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnop
"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopq
#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqr
$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrs
%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrst
&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstu
'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuv
()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvw
)*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwx
*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxy
+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz
,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{
-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|
./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}
/0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~
0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~
123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~ !
23456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~ !"
3456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~ !"#
456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~ !"#$
56789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~ !"#$%
6789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~ !"#$%&
789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~ !"#$%&'
89:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~ !"#$%&'(
9:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~ !"#$%&'()
:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~ !"#$%&'()*
;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~ !"#$%&'()*+
<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~ !"#$%&'()*+,
=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~ !"#$%&'()*+,-
>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~ !"#$%&'()*+,-.
?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~ !"#$%&'()*+,-./
@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~ !"#$%&'()*+,-./0
ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~ !"#$%&'()*+,-./01
BCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~ !"#$%&'()*+,-./012
CDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~ !"#$%&'()*+,-./0123
DEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~ !"#$%&'()*+,-./01234
EFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~ !"#$%&'()*+,-./012345
```

To activate the Rolling ASCII Test:

1. Be sure paper is loaded.

Caution! For wide carriage Model 791, be sure you have wide paper loaded!

2. Turn off printer.
3. Hold QUIET button for several seconds while turning printer on. (If printer simply turns on without starting to print, you didn't hold down QUIET button long enough.)

Hexadecimal Dump Test

If you want to test the data your computer is sending to the printer, you can place the printer in the Hexadecimal Dump Mode. When the printer is in the Hex Dump Mode, all data received, including text and printer commands, will be printed in both hexadecimal and ASCII format.

In the ASCII format, all non-printable characters will be represented by a period.

For example, this line of BASIC code:

```
LPRINT CHR$ (27);"0";CHR$ (30);"This is an example of a hexadecimal
dump."
```

would print like this:

```
1B 30 1E 54 68 69 73 20 69 73 20 61 6E 20 65 78   .0.This is an ex
61 6D 70 6C 65 20 6F 66 20 61 20 68 65 78 61 64   ample of a hexad
65 63 69 6D 61 6C 20 64 75 6D 70 2E 0D 0A          ecimal dump...
```

To engage the Hexadecimal Dump Mode:

1. Be sure paper is loaded.
2. Turn off printer.
3. Hold SEL and FF/LOAD buttons for several seconds while turning on printer.

The printer will print the line "`Hex Data Dump`" and be ready to receive data in the Hexadecimal Dump Mode. To run the test, simply send data to the printer while it is in the Hexadecimal Dump Mode.

When you're done, you can exit the Hexadecimal Dump Mode by either pressing the SEL button or by turning the printer off, then on again.

Resetting Top of Form

To reset the Top of Form to the factory default:

1. Turn off printer.
2. Hold down QUIET and PARK buttons while turning printer back on.

Using Bar codes

Your MICROLINE 790/791 printer incorporates eight different bar codes:

*   UPC A
*   UPC E
*   EAN 8
*   EAN 13
*   Code 39
*   Code 128
*   Interleaved 2 of 5
*   Postnet

You will find a list of the bar code printer commands for each emulation in appendix C.

Here is a brief explanation of each of the available bar codes, along with a sample printout for each one.

UPC A Bar Code

UPC (Universal Product Code) bar coding is used in the supermarket industry. UPC A coding contains ten digits: the first five digits represent the manufacturer, the second five digits identify the product.

UPC E

UPC E bar coding is a six-digit variation of UPC A, used for labeling small items.

EAN 8

EAN (European Article Numbering) bar coding is a variation of UPC coding. EAN 8 encodes eight digits.

EAN 13

EAN 13 encodes 13 digits and contains the same number of bars as UPC A. The thirteenth digit combined with the twelfth digit provides a code representing a country.

Code 39

Also known as 3 of 9 Code, code 39 is used in non-retail applications. Each character has five bars and four spaces. Code patterns have been developed for 44 different alphabetic, numeric and graphic characters.

Code 128

Code 128 has 106 different characters, each of which can have any one of three different meanings depending on which code set (A, B, or C) is engaged. A special code at the beginning indicates which set is engaged: three shift codes are also available for use within the bar code to indicate a change in the code set engaged, as required.

```
$ & ) \ A B C 1 2 C
```

Interleaved2 of 5

Inerleaved2 of 5 bar coding is used mainly in the distribution industry. Two digits are encoded: one in the bars and one in the spaces.

```
1 2 3 4 5 6 7 8 9 5
```

Postnet

Postnet bar coding is used by the U.S. Post Office for sorting mail by automated equipment. It incorporates a coding system using five bars and four spaces for each digit.

Chapter 4: Working with Software

This chapter covers the fundamentals of setting up commercial software packages for use with your printer. Be sure to read your software documentation carefully for more details.

Basic Terminology

Before we start, let's examine a few terms with which you may not be familiar.

Printer Commands

> *If you're using commercial software with an appropriate printer driver (see "Printer Drivers" below), the printer commands will normally be sent to the printer by your software and you won't even need to think about them.*

Printer commands are signals sent by your PC to the printer which guide and control its operation. Printer commands tell the printer what character pitch to use, what font to use, what margins to use, whether to use single or double spacing, when to engage/disengage double width or double height printing, etc.

Printer commands can be sent in decimal, ASCII, or hexadecimal form. The values (decimal/ASCII/hexadecimal) for each type of command depend on which emulation is active (see Appendix C for a listing of printer commands for each emulation).

With only a few exceptions, printer commands begin with the ESC character, decimal 27 (hexadecimal 1B), which serves as signal to the printer that what follows is to be interpreted as a command rather than just a string of characters. Some printer commands expect you supply a numerical value, representing tab stops, line spacing, etc.

Emulations

In order to eliminate hundreds of different sets of printer commands, most printers emulate, or imitate, one of several general printers; i.e., they accept all of that printer's commands and behave as though they were the emulated printer.

Your printer has three emulations:

- IBM Proprinter
- IBM AGM
- Epson LQ (factory default)

Printer Drivers

Compatible Printer Drivers (DOS)

Many of the software packages you use will contain drivers 100% compatible with your printer. For older software, however, it may be necessary to select a driver that functions *nearly* the same as a driver specifically designed for your printer. This generally means that you will be selecting a driver that provides commands to access most, but not all of the available functions; however, the commands that are available will perform properly with your printer.

The table below summarizes the various drivers that will work with your printer. They are listed in order by decreasing compatibility as you go down the list: select one from as high up on the list as possible, based on what is available from among the drivers supplied with your software. If you don't see one from near the top of the list, give the software manufacturer a call to see if they have added any drivers to those supplied when you purchased your software. Software manufacturers are constantly updating their lists of drivers to keep up with the printer market and they may very well have one which will give maximum compatibility with your printer.

IBM Proprinter Emulation	IBM X24e AGM/XL24e AGM Emulation	Epson LQ Emulation
Oki ML 590/1 IBM IBM Proprinter X24e / XL24e IBM Proprinter X24 / XL24 IBM Proprinter IBM Graphics Printer	Use this emulation only when you've selected an IBM Proprinter X24e/ XL24e driver and you need to use Epson LQ high density graphics.	Oki ML 590/1 Epson Epson LQ 870/ 1170 Epson LQ 850/ 1050 Epson LQ 860/ 2550 Epson LQ 2500 Epson LQ 1500 Epson LQ Epson FX Epson JX Epson LX Epson RX Epson MX

Because there are some differences in characteristics such as speed or access to various features, you may wish to experiment with several different drivers. If you must select a driver that is not listed in the table, be sure to check it thoroughly for print features such as boldface, underline and changes in pitch. Don't be surprised if bold-faced items are printed twice, underlines are misplaced, wide spaces are left between lines or the printer behaves chaotically (turn off the printer if the latter occurs). These are all characteristics of an incompatible driver selection.

Windows Printer Drivers

To use this printer on a Windows operating system, install the Windows printer driver, that is on the Printer Software CD-ROM provided with your printer, on your computer.

For information about which Windows systems are compatible with the printer drivers on the Printer Software CD-ROM and the installation procedure open the Readme file on the Printer Software CD-ROM.

Chapter 5: Problem Solving, Maintenance, & Service

This chapter provides solutions to some common printer problems and explains the routine maintenance procedures that will help keep your printer in tip-top operating condition. It also tells you how to order parts, consumables and accessories, and provides information on obtaining service for your printer. You will find your printer's warranty at the back of this Printer Handbook.

Problem Solving

What if …

…nothing happens when I turn on the printer?

The printer may not be plugged in. Check the power cord connection to the outlet and to your printer. If you're using a power strip, make sure it's turned on. Check to be sure that the fuse hasn't blown or that the circuit breaker hasn't tripped.

…the printer doesn't print when the computer sends data?

The printer may be deselected. If the SEL light is out, press the SEL button to select the printer.

The printer cable may not be securely connected. Check the cable to be sure that it is properly connected to both the PC and the printer.

If you have installed the serial I/F board, check to be sure that the board is firmly seated in the printer.

…I'm getting strange symbols, incorrect fonts, etc., when I try to print a document?

The printer driver you have engaged does not agree with the emulation selected for your printer.

To check the emulation selected, first make sure paper is loaded, then press the SEL and SHIFT buttons simultaneously to enter the MENU on your printer. Next, press the GROUP button: this will print the emulation selected.

If the emulation is not the one you want to use, press the SET button to change it to the one you want before exiting the MENU (to exit, press SEL and SHIFT buttons).

If the emulation is correct, check your software documentation on how to select a printer driver, then check to be sure that you have selected one of the drivers listed for that emulation on page 50). The closer the driver is to the top of the list, the more compatible it will be with your printer. If your software doesn't have any of the indicated drivers available, check with the software manufacturer to see if they have added any additional drivers since you purchased your software.

If you have embedded any printer commands in your software, check to be sure that you entered them correctly.

…I've installed a brand new ribbon and the printing is smeared and streaked?

The plastic shield on the ribbon is either loose or missing. The shield must be left on the ribbon when you are installing the cartridge. To remedy this situation, move the printhead to the center of the platen (careful – printhead may be HOT!) and lift off the ribbon cartridge. Check the ribbon shield. If it's loose, secure it in place properly. If it's missing, locate it and reinstall it.

…ink smears on the paper when I print narrow columns?

This may be caused by excessive printhead travel from the centering position. Enter the Menu and set the Centering Position to MODE 1 (see Menu Mode in Chapter 3). For wide-carriage Model ML791, if MODE 1 doesn't work, try setting the Centering Position to MODE 2.

…there are dots missing in my printouts?

The head gap may not be set correctly. Try moving the head gap lever to a lower setting. If that doesn't help, the printhead may be damaged; call for service.

… the Alarm light is on and the Character Pitch 15 light is flashing?

This indicates a paper loading error. To stop the flashing light, press the SEL button. Before trying to load paper in again, check to be sure that you have the paper lever in the correct position (BOT, TOP, REAR) for the path you're using.

Caution! Always turn the printer off before you turn the platen knob!

If the paper lever is in the correct position and you're using rear feed, lift up the paper separator and check to be sure that paper is properly on the tractors and has not jammed up somehow.

If the paper lever is in the correct position and you're using the optional bottom-feed push tractor, check the bottom tractor unit to be sure that paper is properly on the tractors and has not jammed up before entering the printer.

Once the paper is correctly loaded, press and release the SEL button, then hold the SHIFT button and press the RESET (Character Pitch) button.

…I need to load paper, but the Alarm light is *not* on?

If the Alarm light is off, the printer thinks it has paper loaded. To correct this problem, press and release the SEL button, then hold the SHIFT button and press the RESET (Character Pitch) button. The Alarm light will come on and you'll be able to load paper.

…my word processor files don't print the way I have the MENU and front panel set?

Before sending a file to the printer, many word processors send either an "initialization string" or an I-Prime signal to the printer.

The initialization storing contains codes that reset the printer to a default set of features: otherwise the printer might accidentally print using features set for a previous job. These codes will override panel or MENU settings. To set your printer to ignore the reset code, enter the printer MENU (hold SHIFT button while pressing SEL/MENU button) and change the Reset Inhibit item (in the Set-Up group) to Yes. Please note that while this will stop the reset code from resetting your printer, other codes in the initialization string may still override the printer MENU and/ or front panel settings. The I-Prime signal is sent over the parallel interface (pin 31) and will automatically override any settings you have made using the front panel buttons. To eliminate this problem, enter the program MENU (hold SHIFT button while pressing SEL/MENU button) and change the I-Prime item (in the Parallel I/F group) to Invalid.

…the Print Quality and Character Pitch buttons on the front panel won't work?

The Operator Panel Function item on the printer MENU can be used to disable these buttons. If the printer is part of a customized system or if it is used by a number of people, the system manager may have used this option to make sure the printer is always set properly.

…static electricity causes the paper to stick?

In cold, dry weather, static charges can build up on continuous-form paper. This can make the paper cling to the paper separator. If you have this problem during high-volume printing jobs, try moving the single sheet paper guides on the separator together so that the paper rests on the guides rather than on the separator itself.

Maintenance

This section explains how to change ribbons, clear paper jams and clean your printer.

Replacing the Ribbon Cartridge

When replacing the ribbon, be sure to use only ribbons specifically for use with MICROLINE 790 /791 Turbo printers. For best results,use genuine OKI ribbons.

1. Turn printer off.

2. Disengage and swing open access cover.

    Caution! Be careful not to touch the printhead: it may be *hot*!

3. Slide ribbon cartridge along until it is centered on platen, being careful not to touch printhead.

Center printhead
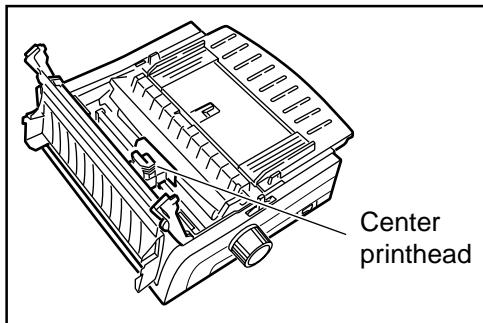
4. Swing front-end of cartridge up off printhead, then lift cartridge out and discard it.

Swing front end up to remove
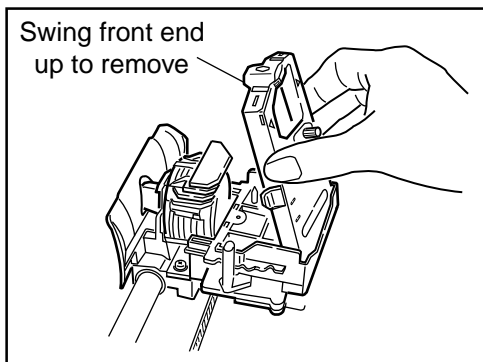
5. Remove new ribbon cartridge from its packaging — **do NOT remove clear plastic ribbon shield!**

Plastic shield facing platen
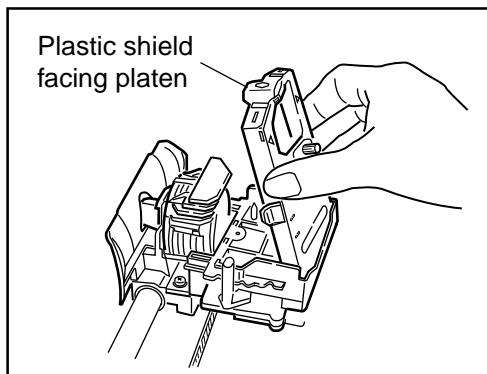
6. Hold ribbon cartridge with knob facing up and exposed portion of ribbon facing platen. Place flat end on ribbon plate, fitting grooves over pins on plate.
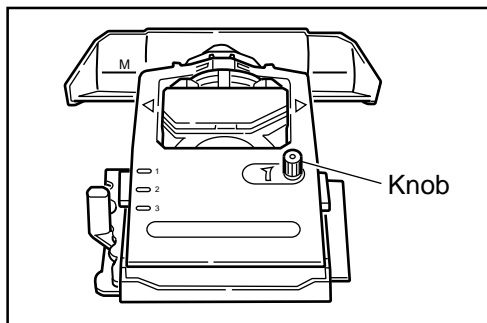
Knob

7. Lower front end of cartridge over printhead until it snaps into place. Turn knob in direction of arrow (clock-wise) to take up any slack in ribbon.

Clearing Paper Jams

Caution! Always turn the printer off before you turn the platen knob!

Rear Feed Jams

To clear a rear-feed paper jam:

1. Turn off printer
2. Turn platen knob to back paper out of printer. Remove any ripped pieces of paper.
3. Reload paper, turn printer back on and press FF/LOAD button.

If your paper keeps jamming, the chances are excellent that you have bits of paper stuck in the paper path. To eliminate this problem:

1. Turn off printer.

2. Use platen knob to back paper out of printer.

3. Remove the paper separator.

Remove Paper separator
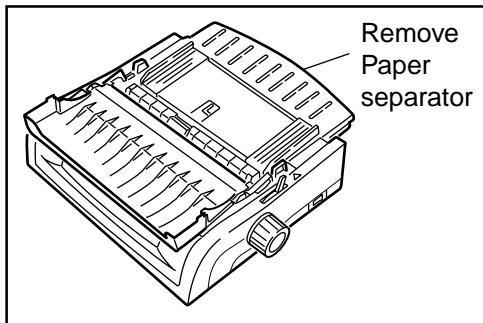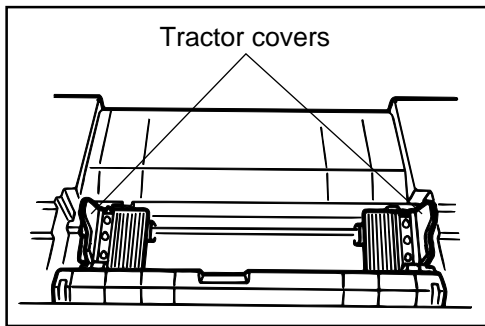
Tractor covers

4. Open tractor covers and remove paper from printer.

Remove pull-up roller assembly
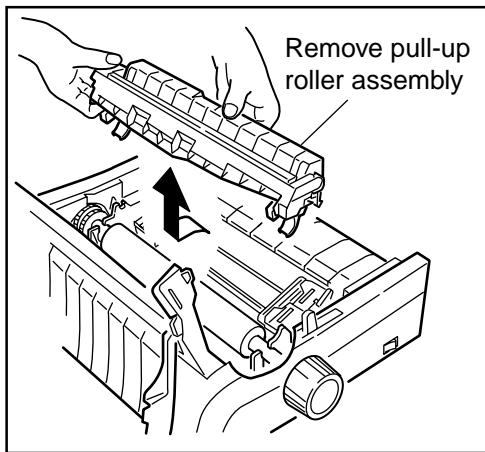
5. Open access cover and lift off pull-up roller assembly.

Note: *Never attach or remove the pull-up roller assembly when the paper separator is in the standing state.*

6. Fold some single-sheet, continuous-feed paper over three times to produce page four sheets thick.

Quadruple-thick paper
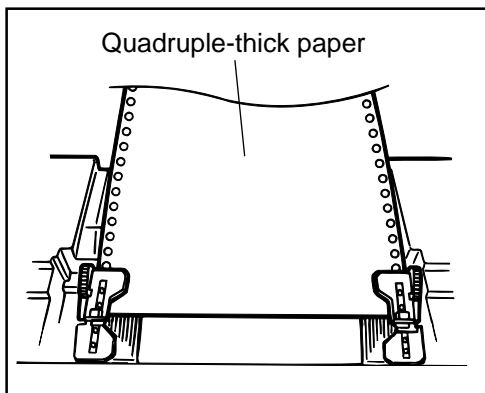
7. Load this quadruple-thick sheet onto tractor pins and close tractor covers.

8. Turn platen knob to draw quadruple-thick paper around platen. This will bring jammed pieces of paper up and out so you can dispose of them.

9. Back quadruple-thick sheet out of printer using platen knob.

Replace pull-up roller assembly
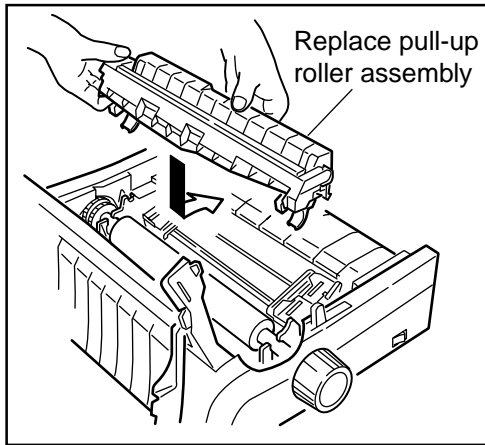
10. Replace pull-up roller assembly.

Note: *When installing a pull-up roller assembly, Shift the paper lever in agreement with the "Rear" mark before the installation.*

11. Reload regular paper (open tractor covers, place paper on pins, close tractor covers).

Replace paper separator
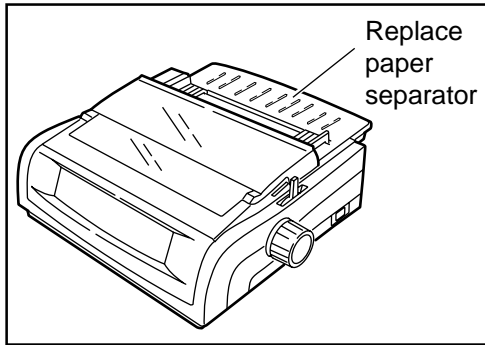
12. Swing access cover and paper separator back into place.

13. Turn printer on and press FF/LOAD button.

Single Sheet Feed Jams

To remove jammed single sheets of paper (top feed):

1. Turn printer OFF.

2. Rotate platen knob to back paper out of carriage.

Lift off pull-up roller assembly

3. If necessary, open access cover and lift off pull-up roller assembly to provide access to remove any ripped pieces from around carriage.
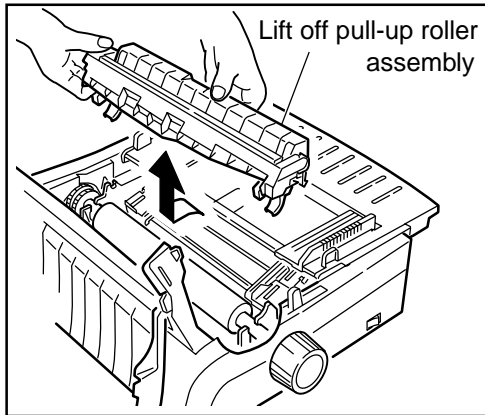
Button Feed Jams

If bottom-feed paper jams:

1. Turn off printer and use platen knob to back paper out carefully.

Lift off pull-up roller assembly

2. Be sure to remove any shreds of paper from printer before reloading paper. (Open access cover and lift off pull-up roller assembly to provide access to carriage area.)
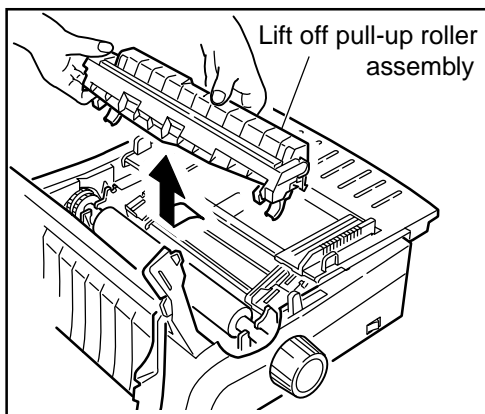
Cleaning the Housing

You should clean the printer every six months (or after about 300 hours of operation). To do this:
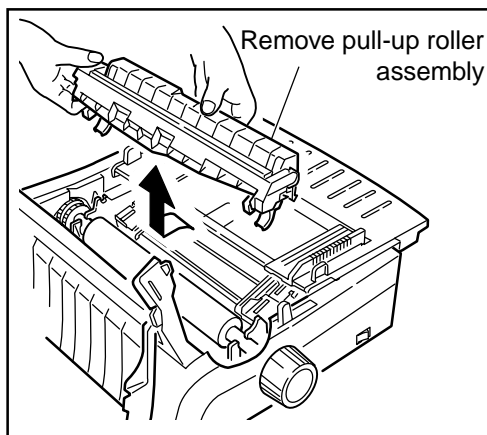
1. Turn printer OFF and remove paper from path.

2. Open access cover and remove pull-up roller assembly.

Remove pull-up roller assembly

3. Use clean, dry cloth to dust area around carriage shaft and platen. Be sure to remove any loose particles of paper.

Note: *The built-up of dust or paper powder in the printer, which may be occurred by some environmental settings or media used, may cause a mulfunction, so execute cleaning according to how the printer is dirty.*
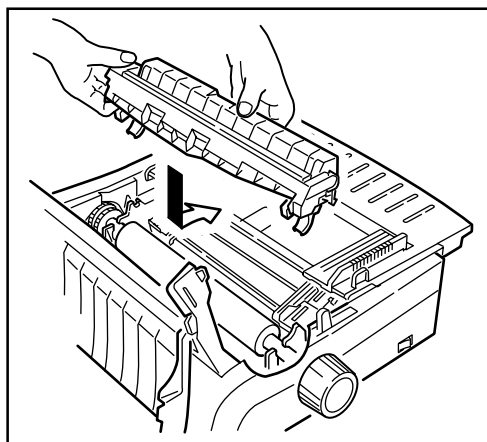
4. Reinstall pull-up roller assembly and close access cover.

Note: *When installing a pull-up roller assembly, Shift the paper lever in agreement with the "Rear" mark before the installation.*

➥ *Never use solvents or strong detergents on the cabinet–they could damage the housing.*

Accessories

You can add even more flexibility to your printer by means of the following optional accessories.

Cut Sheet Feeder, Single-Bin and Dual-Bin
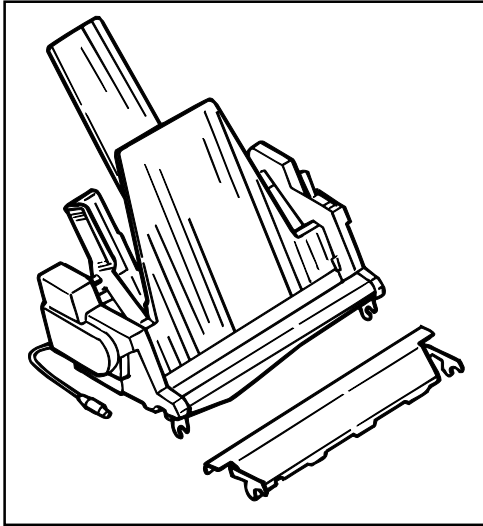
Mounts on the platen to provide continuous single-sheet paper feed. The bin will hold up to 100 sheets of standard, 20-lb paper. With cable for connection to printer.

Push Tractor, Bottom-Feed
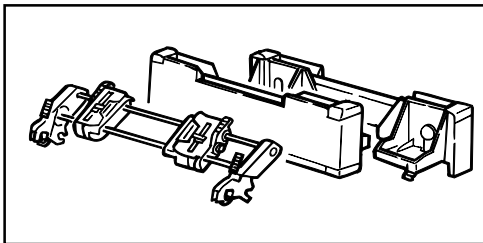
Converts printer for feeding continuous-form paper from the bottom. Use of bottom feed eliminates the curling which takes place as rear-feed paper moves around the platen. Bottom feed is ideal for card stock, thick multi-part forms, labels which could peel off and jam the unit if fed in from the rear, etc.

Includes tractor, support legs for printer, and metal tear bar.

Pull Tractor, Top-Mount
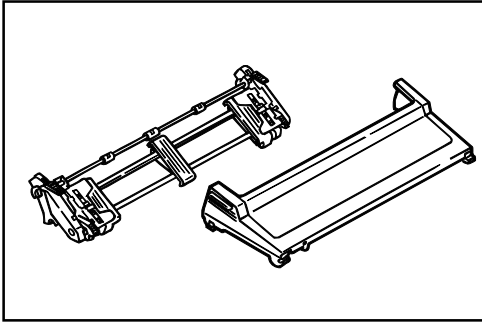
Used for bottom-feed of labels or heavy card stock, or in conjunction with the rear-feed tractor to provide more precise paper control when you're using multi-part forms. Includes cover for installation in place of access cover.

Roll Paper Stand
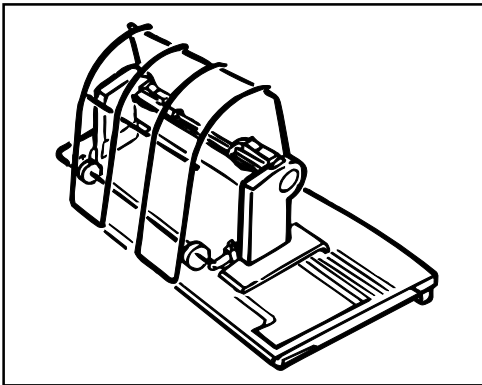
Adapts ML 790 printer for use with roll-type paper (not supplied). Not usable on ML 791.

Includes stand and support. With cable for connection to printer.

Serial Interface

Includes serial interface board and locking piece for installation in printer next to standard parallel interface. Without interface cable.

Note: *The use of the locking piece to 790/791 should be impermissible due to the exclusiveness for other models.*
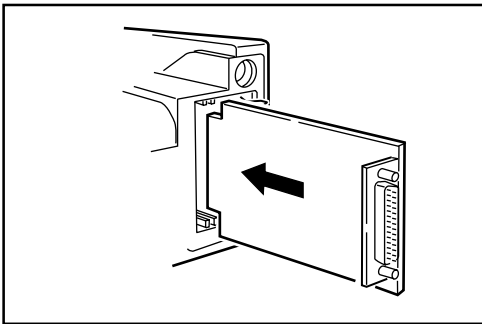
Replacement Parts
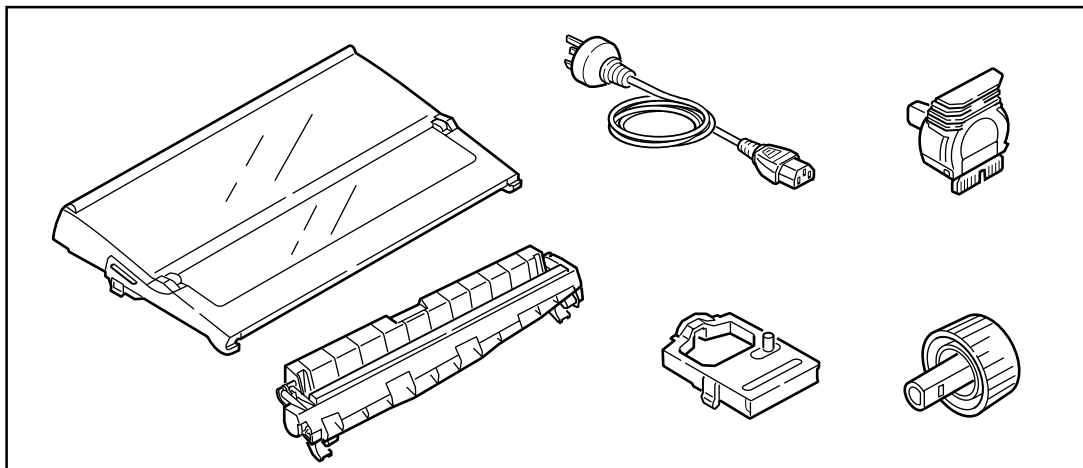
Replacement Part
Access Cover, ML 790
Access Cover, ML 791
AC Cord
Poll-up Roller Assembly, ML 790
Poll-up Roller Assembly, ML 791
Platen Knob
Printhead
Ribbon, Black

Appendix A: Specifications

Print Method	Impact dot matrix
Printhead	24 pins, 0.20 mm diameter with thermal protection

Print Speed

Mode	Characters per Second (CPS)	
High Speed Draft (HSD)	10 cpi	420 cps
Utility	10 cpi	315 cps
	12 cpi	378 cps
	15 cpi	472 cps
	17.1 cpi	269 cps
	20 cpi	315 cps
Letter Quality (LQ)	10 cpi	105 cps
	12 cpi	126 cps
	15 cpi	157 cps
	17.1 cpi	180 cps
	20 cpi	210 cps

Characters per Line (CPL)

Setting	ML790	ML791
10 cpi	80 cpl	136 cpl
12 cpi	96 cpl	163 cpl
15 cpi	120 cpl	204 cpl
17.1 cpi	137 cpl	233 cpl
20 cpi	160 cpl	272 cpl

Emulations	Epson LQ, IBM Proprinter, IBM AGM
Interface	Standard: Centronics parallel, USB
	Optional: RS-232C serial

Graphics Resolution: 360 x 360 dots per inch

Resident Font

Letter Quality	Courier, Gothic, Prestige, Orator, Roman, Swiss, Swiss Bold
Utility	Gothic
Bar Code:	Code 39, UPC A, UPC E, EAN 8, EAN 13, Interleaved 2 of 5, Code 128, Postnet

Receive Buffer Size   MAX 128K

Reliability

Mean Time Between Failures (MTBF)	20000 hours at 25% duty cycle and 35% Page density
Mean Time to Repair (MTTR)	15 minutes
Printhead life	200 million characters average in 10 cpi utility mode at 25% duty and 35% page density

Ribbon Life (on average, 10 cpi utility)	4 million characters

Paper Specifications

Width
    Minimum   3″
    Maximum   ML 790: 10″
                             ML 791: 16″

Weight   12 to 24 lb.

Thickness
    Rear feed   0.014″(0.36 mm)
    Bottom feed   0.017″(0.44 mm)

Paper type	Feed	Weight	Width range
Cut sheets	Top only	14 to 24 lb.	ML790: 7.2" to 8.5" ML791: 7.2" to 14.3"
Single-part continuous forms	Rear, Bottom	12 to 24 lb.	ML790: 3" to 10" ML791: 3" to 16"
Carbonless, multipart continuous form (orig. + 4 copies)	Rear, Bottom	9 to 11 lb.	ML790: 3" to 10" ML791: 3" to 16"
Interleaf, multipart continuous form (orig. + 4 copies)	Rear, Bottom	10 to 12 lb paper, 9 lb carbon	ML790: 3" to 10" ML791: 3" to 16"
Labels	Bottom only	N.A.	ML790: 3" to 10" ML791: 3" to 16"
Envelopes, single feed	Top	24 lb. max.	6.5" to 9.5"
Envelopes, continuous feed, non-overlap type	Bottom only	24 lb. max.	6.5" to 9.5"
Card stock	Bottom only	120 lb. max	N.A.
Transparencies	Top only	—	8.5" x 11"

Dimensions (W x D x H)

ML 790:   15.7 x 13.6 x 6 inch (398 x 345 x 153 mm)
ML 791:   21.7 x 13.6 x 6 inch (552 x 345 x 153 mm)

Weight

ML 790:   16.7 lb (7.6Kg)
ML 791:   21.1 lb (9.6Kg)

Environmental Requirements

Operating Temperature: 41 to 95˚F (5 to 35˚C)
Storage Temperature: 14 to 122˚F (-10 to +50˚C)
Operating Humidity: 20 to 80% RH
Storage Humidity: 5 to 95% RH

Electrical requirements   230 volts ac (+15%, -14%)
                                 50/60 Hz (±2%)

Specifications subject to change without notice.

Appendix B: Menu Selections

The menu selections for your printer are summarized below. Factory defaults are indicated in **bold face italic**. Explanations for each item follow the table.

The table below summarizes all possible menu settings available with your printer. Which of these you will actually see when you are working in the Menu depends on the active emulation and on the options installed.

Group	Item	Setting
Printer Control	Emulation Mode	*Epson LQ*, IBM PPR, IBM AGM
Font	Print Mode	*LQ Courier*, LQ Roman, LQ Swiss, LQ Swiss Bold, LQ Orator, LQ Gothic, LQ Prestige, Utility, HSD
	Pitch	*10 cpi*, 12 cpi, 15 cpi, 17.1 cpi, 20 cpi
	Proportional Spacing	*No*, Yes
	Style	*Normal*, Italics
	Size	*Single*, Double
Symbol Sets	Character Set	*Set I*, Set II
	Language Set	*American*, French, German, British, Danish I, Swedish, Italian, Spanish I, Japanese, Norwegian, Danish II, Spanish II, Latin American, French Canadian, Dutch, Publisher
	Zero Character	*Slashed*, Unslashed
	Code Page	*USA*, Canada French, Multilingual, Portugal, Norway, BRASCII, Abicomp, Multilingual 858, ISO 8859-15
Rear Feed	Line Spacing	*6 LPI*, 8 LPI
	Form Tear-Off	*Off*, 500 ms, 1 sec, 2 sec
	Skip Over Perforation	*No*, Yes
	Page Width*	*13.6"*, 8"
	Page Length	*11"*, 11 $^2/_3$", 12", 14", 17", 5", 3", 3.5", 4", 5.5", 6", 7", 8", 8.5"

Group	Item	Setting
Bottom Feed	Line Spacing	**6 LPI**, 8 LPI
	Form Tear-Off	**Off**, 500 ms, 1 sec, 2 sec
	Skip Over Perforation	**No**, Yes
	Page Width *	**13.6"**, 8"
	Page Length	**11"**, 11 $^2/_3$", 12", 14", 17", 5", 3", 3.5", 4", 5.5", 6", 7", 8", 8.5"
Top Feed	Line Spacing	**6 LPI**, 8 LPI
	Form Tear-Off *5	**Off**, 500ms, 1 sec, 2 sec
	Bottom Margin	**Valid**, Invalid
	Page Width *	**8"**, 13.6"
	Page Length	11", **11 $^2/_3$"**, 12", 14", 17", 3", 3.5", 4", 5.5", 6", 7", 8", 8.5"
	Wait Time	**1 sec**, 2 sec, 500ms
	Page Length Control	**by Menu Setting**, by Actual Page Length
Set-Up	Graphics	**Bi-directional**, Uni-directional
	Receive Buffer Size	**64K**, 128K, 1 Line, 32K
	Paper Out Override	**No**, Yes
	Print Registration 1	**0**, 0.05 mm Left, 0.10 mm Left, 0.15 mm Left, 0.20 mm Left, 0.25 mm Left, 0.25 mm Right, 0.25 mm Right, 0.15 mm Right, 0.10 mm Right, 0.05 mm Right
	Print Registration 2	**0**, 0.05 mm Left, 0.10 mm Left, 0.15 mm Left, 0.20 mm Left, 0.25 mm Left, 0.25 mm Right, 0.25 mm Right, 0.15 mm Right, 0.10 mm Right, 0.05 mm Right
	Operator Panel Function	**Full Operation**, Limited Operation
	Reset Inhibit	**No**, Yes
	Print Suppress Effective	**Yes**, No
	Auto LF	**No**, Yes
	Auto CR *1	**No**, Yes
	CSF Bin Select	**Bin 1**, Bin 2
	SI Select Pitch (10 CPI) *1	**17.1 CPI**, 15 CPI
	SI Select Pitch (12 CPI) *1	**20 CPI**, 12 CPI
	Time Out Print	**Valid**, Invalid
	Auto Select	**No**, Yes
	Graphics Speed	**Low**, High
	Centering Position	**DEFAULT**, MODE 1, MODE 2
	CSF Type *	**Wide**, Narrow

Group	Item	Setting
Set-Up	Power Saving Power Save Time	*Enable*, Disable *5 min*, 10 min, 15 min, 30 min, 60 min
Parallel I/F	I-Prime Pin 18 Auto Feed XT *2 Bi-Direction	*Buffer Print*, Buffer Clear, Invalid *+5V*, Open *Invalid*, Valid *Enable*, Disable
Serial I/F *4	Parity Serial Data 7/8 Bits Protocol Diagnostic Test Busy Line Baud Rate DSR Signal DTR Signal Busy Time	*None*, Odd, Even *8 Bits*, 7 Bits *Ready/Busy*, X/On/X-Off *No*, Yes *SSD–*, SSD+, DTR, RTS 19200 bps, *9600 bps*, 4800 bps, 2400 bps, 1200 bps, 600bps, 300 bps *Valid*, Invalid *Ready on Power Up*, Ready on Select *200 ms*, 1 sec.
CSF Bin 1 *3	Line Spacing Bottom Margin Page Width * Page Length	*6 LPI*, 8 LPI *Valid*, Invalid *8″*, 13.6" 11", *11 $^2/_3$″*, 12", 14", 17", 3", 3.5", 4", 5.5", 6", 7", 8", 8.5"
CSF Bin 2 *3	Line Spacing Bottom Margin Page Length	*6LPI*, 8LPI *Valid*, Invalid 11", *11 $^2/_3$″*, 12", 14", 17", 3", 3.5", 4", 5.5", 6", 7", 8", 8.5"

*   ML 791 only
*1   Appears only when IBM Proprinter emulation is selected.
*2   Appears only when Epson LQ emulation is selected.
*3   Appears only when optional Cut Sheet Feeder Accessory is installed.
*4   Appears only when optional Serial Interface is installed.
*5   Applicable only when the Roll Paper Stand is installed.

Explanation of Menu Items

These explanations are in alphabetical sequence to make it easier to look them up. Many of the items will appear only with optional equipment installed, as noted below. You will find the items Line Spacing, Form Tear-Off, Skip Over Perforation and Page Length appearing several times in the menu (once for each paper path).

Auto CR. IBM mode only. No (factory default) or Yes. Choose Yes to make your printer automatically perform a carriage return when a LF is received at the end of the line.

Auto LF. No (factory default) or Yes. Change to Yes if your printer overprints. Keep this set to No if your software adds a line feed when a carriage is received at the end of a line. If your printout is consistently double spaced, set this item to No.

Auto Select. No (factory default) or Yes. Determines whether or not your printer will automatically be selected after you load in paper. With the factory default (No) engaged, the printer will be deselected so that you can set the Top of Form. If you always use the same Top of Form setting, change this setting to Yes so that you don't have to press the SEL button to select the printer after loading paper.

Auto Feed XT. Epson mode only. Invalid (factory default) or Valid. In the Epson emulation, the XT signal on pin 14 of the parallel interface can control automatic line feed. Some interface cables are wired in such a way that automatic line feed is always in effect: the Auto Feed XT item eliminates this potential problem. The factory setting causes the printer to ignore this signal; if your system uses pin 14 to control automatic line feed, change the setting to Valid.

Baud rate. Appears only if optional Serial Interface is installed. Range from 19,200 to 300 bps: factory setting, 9600 bps. This item sets the transmission rate for the system.

Bi-Direction. Enable (factory default) or Disable. Enables or disables the bi-directional transmission (PnP) in Nibble mode.

Bottom Margin. Valid (factory default) or Invalid. Sets whether or not the printer will ignore the bottom margin setting. Change the setting to Invalid if you want printer to ignore the bottom margin setting. Be careful if you use this feature: it lets the printer continue printing when there's no more paper, which can cause loss of data and may damage the printhead.

Busy Line. Appears only if optional Serial Interface is installed. SSD- (factory default), SSD+, DTR, RTS. If Ready / Busy protocol (factory default) is selected, you can choose which line your system monitors for a busy signal:

> SSD -9V, select SSD-
>
> SSD +9V, select SSD+
>
> DTR -9V, select DTR
>
> RTS -9V, select RTS

Busy Time. Appears only if optional Serial Interface is installed. 200 ms (factory default) or 1 sec.
Sets the length of the busy signal when the Ready / Busy protocol (factory default) is engaged.

Centering Position. Used to limit Printhead travel when printing narrow columns. Select Mode 1 for Model ML790; Select Mode 1 or Mode 2 for Model ML791.

Character Set. Choose IBM Set I (factory default) or IBM Set II.

Code Page. Choose USA (factory default), Canada French, Multilingual, Portugal, Norway BRASCII, Abicomp, Multilingual 858, ISO 8859-15.

CSF Bin Select. Appears only if optional Dual-Bin Cut Sheet Feeder is installed. Choose Bin 1 (factory default) or Bin 2.

CSF Type. Select Wide (default) or Narrow for CSF type.

Diagnostic Test. Appears only if optional Serial Interface is installed. No (factory default) or Yes. Select Yes if you want to perform a diagnostic test of the serial interface.

DSR Signal. Applies only when optional Interface is installed. Valid (factory default) or Invalid. Used with Ready / Busy protocol to select the way your system handles the DSR Signal.

DTR Signal. Applies only when optional Serial Interface is installed. Ready on Power Up (factory default) or Ready on Select. Change to Ready on Select if the DTR signal is required when the printer is selected; leave as Ready on Power Up if DTR signal is required when printer is turned on.

Emulation Mode. IBM PPR , IBM AGM, or Epson LQ (factory default). Selects the printer command set you want your printer to use: IBM X24e or XL24e Proprinter, IBM X24e or XL24e Alternate Graphics Mode (AGM), or Epson LQ 850/ 1050.

Form Tear-Off. Off (factory default), 500 ms, 1 sec, or 2 sec. Form Tear-Off advances the paper to the perforation so that you can tear off a sheet of continuous-forms paper. You can turn this feature off, or you can select a time interval for the printer to wait before advancing the paper.

Graphics. Bi-directional (factory default) or Uni-directional. Bi-directional graphics print faster than uni-directional graphics, but uni-directional graphics have better print registration. Bi-directional graphics printing can be optimized by adjusting the Print Registration setting in the Menu.

Graphics Speed. Low (factory default) or High. Choose High speed for faster printing when optimum print quality is not an issue.

I-Prime. Buffer Print (factory default), Buffer Clear, or Invalid. Determines how the printer will react to the I-Prime signal from your software. With the factory default engaged, when the printer receives the I-Prime signal, it will print out the contents of the buffer before resetting. Change the setting to Buffer Clear if you wish the printer to dump the contents of its buffer immediately upon receiving the I-Prime signal. Change to Invalid if you want the printer to ignore your software's I-Prime signal. This will permit you to enter settings through the printer's control panel which will not be automatically over-ridden by the software's settings when the I-Prime signal is sent.

Language Set. American (factory default), French, German, British, Danish I, Swedish, Italian, Spanish I, Japanese, Norwegian, Danish II, Spanish II, Latin American, French Canadian, Dutch, or Publisher. Replaces certain symbols with special characters used in the respective foreign languages.

Line Spacing. 6 lpi (factory default) or 8 lpi. Choose 8 lines per inch for tighter line spacing, to get more lines per page.

Operator Panel Function. Full Operation (factory default) or Limited Operation. Change to Limited Operation to deactivate the PRINT QUARITY and CHARACTER PITCH buttons on the control panel. Then you can control these features only through your software. This can be useful when several people are using the printer and you don't want its settings changed.

Important! This feature also prevents access to the Menu. To access the Menu, turn the printer off, then hold down the SEL key while turning on the printer.

Page Length. 11″ (factory default), $11\,{}^{2}/_{3}$″, 12″, 14″, 17″, 5″, 3″, 3.5″, 4″, 5.5″, 6″, 7″, 8″, 8.5″. Selects the length of the paper you'll be using in your printer. This enables the printer to keep track of the initial printing position on each page (Top of Form).

Page Length Control. Choose page length control system for SASF mode.
    by Actual Page Length ..... Control page length by actual physical page length.
    by Menu Setting .... Control page length by logical page length.

Page Width. Appears in Menu for wide-carriage model only. Choose a page width of 8″ (factory default) or 13.6″.

Paper out Override. No (factory default) or Yes. The paper out detector senses when less than an inch of paper remains in the printer and stops printing at that point. Changing this setting to Yes overrides the detector so you can print closer to the bottom of the page if you're using single sheets. Be careful if you use this feature: it lets the printer continue printing when there's no more paper, which can cause loss of data and may damage the printhead.

Parity. Appears only if optional Serial Interface is installed. None (factory default), Odd, or Even. Selects the type of parity your system uses.

Pin 18. +5V (factory default) or Open. Sets the signal on pin 18.

Pitch. 10 cpi (factory default), 12 cpi, 15 cpi, 17.1 cpi, or 20 cpi. Selects the character width measured in characters per inch (cpi).

Power Save Time. 5 min (factory default), 10 min, 15 min, 30 min, 60 min. Sets the time until the printer enters the power save mode. This setting is effective when the power saving option is enabled.

Power Saving. Enable (factory default) or Disable. Enables or disables the power save mode. When the power save mode is enabled, the printer enters the power save mode when the time set in the Power Save Time option elapses while the printer is idle. The SEL LED flashes and other LED turn off when the printer enters the power save mode.

Print Mode. LQ Courier (factory default), LQ Roman, LQ Swiss, LQ Swiss Bold, LQ Orator, LQ Gothic, LQ Prestige, HSD or Utility. Choose one of the LQ fonts for letter quality printing; choose utility for high-speed printing.

Print Registration. 0 (factory default), 0.05 mm Left, 0.15 mm Left, 0.20 mm Left, 0.25 mm Left, 0.25 mm Right, 0.20 mm Right, 0.15 mm Right, 0.10 mm Right, or 0.05 mm Right. Change the setting as required to obtain the best registration for bi-directional printing.

Print Suppress Effective. Yes (factory default) or No. Enables/disables print suppress command. The factory default enables the print suppress command: the printer will ignore all data it receives after it accepts the print suppress command. Change to No to cause your printer to ignore the print suppress command.

Proportional Spacing. No (factory default) or Yes. Change to Yes to engage proportional spacing of characters.

Protocol. Appears only if optional Serial Interface is installed. Selects the type of protocol your system uses: Ready/Busy (factory default) or X-On/X-Off.

Receive Buffer Size. 64K (factory default), 128K, 1 Line, or 32K. Selects the amount of memory devoted to holding received data. Choosing 1 Line will tie up your computer during printing, but if you about the print job the printer will stop printing much sooner.

Reset Inhibit. No (factory default) or Yes. Change to Yes if you want your printer to ignore the reset command sent by software. This will prevent your software reset command from changing the settings you have made through the front panel controls or through printer commands. If you engage this feature, don't forget that it will also prevent your software from clearing out existing settings when you finish printing one document and switch to another.

Serial Data 7/8 Bits. Appears only if optional Serial Interface is installed. 8 Bits (factory default) or 7 Bits. Change to 7 bits if your system uses a 7-bit data format.

SI Select Pitch (10 CPI). IBM mode only. 17.1 CPI (factory default) or 15 CPI. Sets what pitch (17.1 or 15 characters per inch) will be engaged when the printer control panel is set for 10 cpi and the SI command is received.

SI Select Pitch (12 CPI). IBM mode only. 20 CPI (factory default) or 12 CPI. Sets what pitch (20 or 12 characters per inch) will be engaged when the printer control panel is set for 12 cpi and the SI command is received.

Size. Choose Single (factory default) or Double width and height printing.

Skip Over Perforation. No (factory default) or Yes. Change to Yes if you want the printer to advance automatically to the next page when it comes within one inch of the bottom of the page. If your software has its own page formatting controls, keep this item set to No to avoid interface.

Style. Choose Normal (factory default) or Italics.

Time Out Print. Valid (factory default) or Invalid. When printing, if the printer doesn't receive any data, a line feed, or a form feed signal for awhile, it will automatically dump out what's in the print buffer. If your software spends a long time prossing between feeding portions of data to the printer, you should change the setting to Invalid to keep your printer from inadvertently dumping the received data while it's waiting for more.

Wait Tine. 500 ms, 1 sec (factory default), or 2 sec. Sets the amount of the printer will wait for more data before jumping from the print position up to the form tear off position.

Zero Character. Slashed (factory default) or Unslashed. The factory default will cause a slash to appear in zeros to distinguish them from the capital letter O. To disengage the slashed zero, change this to Unslashed.

Appendix C: Commands–Epson Emulation

This appendix contains the commands for the Epson LQ emulation, grouped by function.

Normally the commands in this table override Menu settings. Except as noted, these commands are cancelled and the printer returns to factory and Menu settings when the printer receives an Initialization, Software I-Prime, or Change Emulation command, or when it is turned off.

Epson Function	Commands (ASCII, Decimal, Hexadecimal)	Notes
Horizontal Control		
Carriage Return	ASCII: CR Dec: 13 Hex: 0D	Prints data in print buffer and performs carriage return.
Set Horizontal Tabs	ASCII: ESC D n_1 n_2 ··· n_k NUL Dec: 27 68 n_1 n_2 ··· n_k 0 Hex: 1B 44 n_1 n_2 ··· n_k 00	Sets horizontal tab stop positions. n=position of tab stop–maximum one less than # of characters per line k=1 to 32; n_1=0: clear tabs Default: every 8 columns Once tabs are set, they remain the same even if character pitch is changed. Move to next horizontal tab stop
Horizontal Tab	ASCII: HT Dec: 9 Hex: 09	

Epson Function	Commands (ASCII, Decimal, Hexadecimal)	Notes
Absoulte Horizontal Position	ASCII: ESC \$ n_1 n_2 Dec: 27 36 n_1 n_2 Hex: 1B 24 n_1 n_2	Move to new horizontal position. Amount of movement from left margin is calculated as follows: $[n_1 + (n_2 \times 256)]$ x (basic unit in inches), where the basic unit is set by ESC (U, set unit command. The default of the basic unit is 1/60 inch. n_1=0 to 255 n_2=0 to 255 n_1=n_2=0: left margin Max. value: for 1/60 inch basic unit, n_1=48 n_2=3(13.6" shift) Space moved using this command will not be underlined. DEL command will not delete the skipped amount.
Relative Horizontal Position	ASCII: ESC \ n_1 n_2 Dec: 27 92 n_1 n_2 Hex: 1B 5C n_1 n_2	Move to new horizontal position, relative to present position. Amount of movement is calculated as follows: $\pm (n_1 + [n_2 \times 256]$ x (basic unit in inches), where the basic unit is set by ESC (U, set unit command. The default of the basic unit with LQ is 1/180 inch, and with UTL it is 1/120 inch. n_1=0 to 255 n_2=0 to 255 n_1=n_2=0: no movement + moves to right; - moves to left
Set Print Position	ASCII: ESC DLE @ P_n A_1 A_2 P_1 P_2 P_3 P_4 Dec: 27 16 64 [data] Hex: 1B 10 40 [data]	OKI unique command. Sets next horizontal position of printhead. P_n= number of parameter bytes to follow, range 0 to 255 A_1= specifies whether motion is absolute or relative: even-absolute from left margin; odd=relative from present position A_2= specifies direction of relative movement: even= toward right margin (forward); odd= toward left margin (reverse) $0 \leq P_1, P_2, P_3, P_4 \leq 9$ representing number of units to move (size of unit depends on character pitch)

Epson Function	Commands (ASCII, Decimal, Hexadecimal)	Notes
Left Margin Set	ASCII: ESC l n Dec: 27 108 n Hex: 1B 6C n	Sets left margin n character spaces from printhead home position; must be at least 5 spaces (5 cpi) to left of right margin. n=0 to 255 n=0: home position
Right Margin Set	ASCII: ESC Q n Dec: 27 81 n Hex: 1B 51 n	Sets right margin n character spaces from printhead home position; must be greater than the left margin. n=1 to 255 n=0: command ignored
Auto Justification	ASCII: ESC a n Dec: 27 97 n Hex: 1B 61 n	Justifies text according to the value of n: n=0: Left n=1: Center n=2: Right n=3: Full (left & right)– use carriage return only at end of paragraph.
Unidirectional Print On/Off	ASCII: ESC U n Dec: 27 85 n Hex: 1B 55 n	Turns unidirectional (left to right only) printing on and off. n=1: Unidirectional printing On n=0: Unidirectional printing Off (normal bidirectional printing)
One-line Unidirectional Printing	ASCII: ESC < Dec: 27 60 Hex: 1B 3C	Turns on unidirectional (left to right) printing for one line.
Backspace	ASCII: BS Dec: 8 Hex: 08	Prints data in print buffer and moves one character to the left according to the current character pitch.
Delete One Character	ASCII: DEL Dec: 127 Hex: 7F	Deletes last character in print buffer.
Vertical Control		
Set $1/6$-inch Line Spacing	ASCII: ESC 2 Dec: 27 50 Hex: 1B 32	Sets line spacing of $1/6$-inch (6 lines per inch). This is standard typewriter spacing.
Set $1/8$-inch Line Spacing	ASCII: ESC 0 Dec: 27 48 Hex: 1B 30	Sets line spacing of $1/8$-inch (8 lines per inch).

Epson Function	Commands (ASCII, Decimal, Hexadecimal)	Notes
Set $n/60$-inch Line Spacing	ASCII: ESC A n Dec: 27 65 n Hex: 1B 41 n	Sets line spacing of $n/60$-inch. n=0 to 255 n=0: no line feed.
Set $n/180$-inch Line Spacing	ASCII: ESC 3 n Dec: 27 51 n Hex: 1B 33 n	Sets a line spacing of $n/180$-inch. n=0 to 255 n=0: no line feed
Set $n/360$-inch Line Spacing	ASCII: ESC + n or ESC [n Dec: 27 43 n or 27 93 n Hex: 1B 2B n or 1B 5B n	Sets line spacing of $n/360$-inch. ESC [n is OKI unique command n=0 to 255 n=0: no line feed
Line Feed	ASCII: LF Dec: 10 Hex: 0A	Prints buffer data and moves the printhead by the current line spacing value. Cancels SO and ESC SO commands.
$n/180$-inch Line Feed	ASCII: ESC J n Dec: 27 74 n Hex: 1B 4A n	Executes one $n/180$-inch line feed without changing line spacing. n=0 to 255 n=0: no line feed, but initiates printing
$n/180$-inch Reverse Line Feed	ASCII: ESC j n Dec: 27 106 n Hex: 1B 6A n	Executes one $n/180$-inch reverse line feed without changing line spacing. n=0 to 255 n=0: no line feed, but initiates printing
$n/360$-inch Line Feed	ASCII: ESC] n Dec: 27 93 n Hex: 1B 5D n	OKI unique command. Executes $n/360$-inch line feed without changing line spacing. n=0 to 255 n=0: no line feed, but initiates printing
Set relative vertical print position	ASCII: ESC (v n_1 n_2 m_1 m_2 Dec: 27 40 118 n_1 n_2 m_1 m_2 Hex: 1B 28 76 n_1 n_2 m_1 m_2	Performs carriage return in the forward or reverse direction from the current position. n_1=2, n_2=0: specifies the number of parameters (inbytes) to follow Amount of carriage returns executed=$\pm(m_1 +[m_2 x256])$ x (basic unit in inches) The basic unit is set by set unit command ESC (U. The default of basic unit is 1/360 inch. Forward feeding exceeding approx. 46.2 inches and reverse feeding exceeding approx. 0.5 inch are invalid. Reverse feeding is invalid in raster graphics mode.

Epson Function	Commands (ASCII, Decimal, Hexadecimal)	Notes
		It is a print carriage return execution command, which does not involve returning to previous settings following the execution of this command.
Set absolute vertical print position	ASCII: ESC (V n_1 n_2 m_1 m_2 Dec: 27 40 86 n_1 n_2 m_1 m_2 Hex: 1B 28 56 n_1 n_2 m_1 m_2	Indicates the absolute position within the paper size, and executes carriage return. n_1=2, n_2=0: specifies the number of parameters (in bytes) to follow Amount of carriage returns executed=$\pm(m_1 + [m_2 \times 256])$ x (basic unit in inches) The basic unit is set by set unit command ESC (U. The default of basic unit is 1/360 inch. Forward feeding exceeding approx. 46.2 inches and reverse feeding exceeding approx. 0.5 inch are invalid. It is a print carriage return execution command, which does not involve returning to pervious settings following the execution of this command.
Form Feed	ASCII: FF Dec: 12 Hex: 0C	Prints data in buffer and advances paper to next top of form. Canceles SO and ESC SO command. With Cut Sheet Feeder, inserts or ejects paper depending on status of paper when command is issued.
Vertical Tab	ASCII: VT Dec: 11 Hex: 0B	Print buffer data and move to next vertical tab stop.
Set Vertical Tab Stops	ASCII: ESC B n_1 n_2 $\cdots$ n_k NUL Dec: 27 66 n_1 n_2 $\cdots$ n_k 0 Hex: 1B 42 n_1 n_2 $\cdots$ n_k 00	Sets vertical tab stops at specified lines relative to Top of Form position. k=1 to 16: number of tabs n=1 to 255: line number where tab is to be set. n=0: clears tab setting for Vertical Format Unit channel 0

Epson Function	Commands (ASCII, Decimal, Hexadecimal)	Notes
Set Vertical Format Unit (VFU)	ASCII: ESC b m n_1 n_2 ... n_k NUL Dec: 27 96 m n_1 n_2 ... n_k 0 Hex: 1B 62 m n_1 n_2 ... n_k 00	Programs up to 8 separate sets (channels) of vertical tab stops. m=0 to 7: channel number (0 is default set by ESC B command) k=1 to 16: number of tab stops in channel n=1 to 255: number of lines down from Top of Form position n=0: clear tab settings for channel m
Select Vertical Tab Channel	ASCII: ESC / n Dec: 27 47 n Hex: 1B 2F n	Activates preprogrammed vertical tab channel n. VT moves to stops in this channel. n=0 to 7: channel number (0 is default)
Set Page Length in Lines	ASCII: ESC C n Dec: 27 67 n Hex: 1B 43 n	Sets page length in lines. Current position becomes top of form. Printer calculates page length vy multiplying current line feed pitch by value entered for "n". n=1 to 255. Cancels Skip over Perforation setting. Page length set by this command will not change even if line spacing is changed.
Set Page Length in Inches	ASCII: ESC C NUL n Dec: 27 67 0 n Hex: 1B 43 00 n	Sets page length in inches. Current position becomes top of form. n=1 to 22. Cancels Skip over Perforation setting.
Set page length in defined unit	ASCII: ESC (C n_1 n_2 m_1 m_2 Dec: 27 40 67 n_1 n_2 m_1 m_2 Hex: 1B 28 43 n_1 n_2 m_1 m_2	Sets the page length to the currently selected paper mode. n_1=2, n_2=0: specifies the number of parameters (in bytes) to follow Amount of carriage returns executed= $\pm(m_1 + [m_2 \times 256]) \times$ (basic unit in inches) The basic unit is set by set unit command ESC (U. The default of basic unit is 1/360 inch. Page length selection exceeding 22 inches is invalid. This command is invalid when m_1=m_2=0. Skip Over Perforation feature is deactivated by this command.

Epson Function	Commands (ASCII, Decimal, Hexadecimal)	Notes
Set page format	ASCII: ESC (c n_1 n_2 t_1 t_2 b_1 b_2 Dec: 27 40 99 n_1 n_2 t_1 t_2 b_1 b_2 Hex: 1B 28 63 n_1 n_2 t_1 t_2 b_1 b_2	Set the top and bottom margins for the currently selected paper mode. n_1=4, n_2=0: specifies the number of parameters (in bytes) to follow. Top margin=(t_1 + [t_2 x256]) x (basic unit in inches) Bottom margin=(b_1 +[b_2 x256]) x (basic unit in inches) The default of basic units 1/360 inch. Skip Over Perforation feature is deactivated by this command.
Set Skip Over Perforation area (bottom margin)	ASCII: ESC N n Dec: 27 78 n Hex: 1B 4E n	Activates Skip Over Perforation feature and sets it for n lines at the current line spacing. When Perforation Skip area is entered, printer will automatically feed paper down to top of form on next page. Once this command is entered, the Skip Over Perforation setting will remain the same even if line spacing is changed. n=1 to 255
Cancel Skip Over Perforation	ASCII: ESC O Dec: 27 79 Hex: 1B 4F	Deactivates Skip Over Perforation. Command overrides menu.
Cut Sheet Feeder Option		
Cut Sheet Feeder Control	ASCII: ESC EM n Dec: 27 25 n Hex: 1B 19 n	Controls Cut Sheet Feeder accessory. n=1: Select bin 1 n=2: Select bin 2 (if present) n=73 (ASCII "I"): Insert sheet n=82 (ASCII "R"): Eject sheet
Character Sets		
Copy ROM Character Set to RAM Character Set	ASCII: ESC : 0 n 0 Dec: 27 58 0 n 0 Hex: 1B 3A 00 n 00	Copies the designated character set to the user defined set in RAM: n=0: Roman n=1: Swiss n=2: Courier n=3: Prestige n=7: Orator n=122: Swiss Bold n=124: Gothic n=126: MENU setting

Epson Function	Commands (ASCII, Decimal, Hexadecimal)	Notes
Define Custom Character(s)	ASCII: ESC & 0 [data] Dec: 27 38 0 [data] Hex: 1B 26 00 [data]	Defines and stores in RAM up to 256 utility quality character patterns. Custom character will be cleared by Initialize command, Software I-PRIME command, Emulation Switch command, I/F I-PRIME signal, or by turning the printer off. If Receive Buffer Size in MENU is Set to 23K, this command is Ignoved.
Custom Character Set On / Off	ASCII: ESC % n Dec: 27 37 n Hex: 1B 25 n	Engages / disengages custom character set. n=0: Select custom character set n=1: Select default character set
Select International Character Set (set Code Page)	ASCII: ESC R n Dec: 27 82 n Hex: 1B 52 n	Select character set containing 15 special characters used in foreign language printing: n=0: American n=26: Multilingual n=1: French n=27: Norway n=2: German n=28: Portugal n=3: British n=42: Canada French n=4: Danish I n=80: BRASCII n=5: Swedish n=81: Abicomp n=6: Italian n=82: ISO 8859-15 n=7: Spanish I n=83: Multilingual 858 n=8: Japanese n=9: Norwegian n=10: Danish n=11: Spanish II n=12: Latin American n=13: French Canadian n=14: Dutch n=64: Publisher
Assign character table	ASCII: ESC (t n_1 n_2 d_1 d_2 d_3 Dec: 27 40 116 n_1 n_2 d_1 d_2 d_3 Hex: 1B 28 74 n_1 n_2 d_1 d_2 d_3	The character tables indicated by d_2, d_3 are stored in the four types of areas indicated by d_1 (Character Table 0-3). From among the four tables, one is selected by ESC t command. n_1=3, n_2=0: specifies the number of parameters (in bytes) to follow d_1=0 to 3: stored character table number. d_2, d_3=0, 0: Italic d_2, d_3=1, 0: PC 437 (USA) d_2, d_3=3, 0: PC 850 (Multilingual) d_2, d_3=7, 0: PC 860 (Portugal) d_2, d_3=8, 0: PC 863 (Canada-French) d_2, d_3=9, 0: PC 865 (Norway) d_2, d_3=25, 0: BRASII d_2, d_3=26, 0: Abicomp

Epson Function	Commands (ASCII, Decimal, Hexadecimal)	Notes
Select Epson Character Set	ASCII: ESC t n Dec: 27 116 n Hex: 1B 74 n	Table selection is made from among four character tables. n=0: Character Table 0 n=1: Character Table 1 n=2: Character Table 2 n=3: Character Table 3 The tables designated by default are as follows: Character Table 0: Italic Character Table 1: Table being selected by "CodePage" in the MENU Character Table 2: DLL character re-allocation. Character Table 3: PC 437 (USA)
Print data as character table	ASCII: ESC (^ n_1 n_2 [data] Dec: 27 40 94 n_1 n_2 [data] Hex: 1B 28 5E n_1 n_2 [data]	All [data] become printing data. All codes of 01H-FF are treated as printing data. 00H code is ignored as Null code. The number of printing data (in bytes) to follow are indicated by n_1 and n_2. Number of printing data (in bytes)=n_1 + [n_2 x 256]
Permit printing of upper range control codes	ASCII: ESC 6 Dec: 27 54 Hex: 1B 36	Enables printing of characters in upper ASCII code range (128 to 159).
Cancel printing of upper range control codes	ASCII: ESC 7 Dec: 27 55 Hex: 1B 37	Cancels ESC 6 command.
Bar Code Command		
Select Bar Code Type and Size	ASCII: ESC DLE A m n_1 ⋯ n_8 Dec: 27 16 65 m n_1 ⋯ n_8 Hex: 1B 10 41 m n_1 ⋯ n_8	m is number of parameters specified: 2, 4, 5, 6, 7, or 8 n_1, n_2 set bar code style as follows: n_1, n_2=0, 1: EAN8 n_1, n_2=0, 2: EAN13 n_1, n_2=1, 0: UPC-A n_1, n_2=1, 4: UPC-E n_1, n_2=2, 0: CODE 39 n_1, n_2=3, 0: Interleaved 2 of 5 n_1, n_2=4, 0: Code 128

Epson Function	Commands (ASCII, Decimal, Hexadecimal)	Notes
		n_3, n_4 set vertical length of bars: normal value is $([n_3 \times 10] + n_4)$ ($15/180$-inch) n_5 sets width of modules or black bars, depending on style engaged. n_6 sets spacing n_7 sets ratio of wide element to narrow element n_8: Specifies whether or not characters are to be attached $n_8=0$: characters not attached $n_8=1$ or more: LQ characters attached
Print Industrial Bar Code Data	ASCII: ESC DLE B m n [data] Dec: 27 16 66 m n [data] Hex: 1B 10 42 m n [data]	Prints bar code data. m=amount of data (in bytes) to follow n specifies Code 128 mode (when Code 128 is selected) as follows: n=65: Set A n=66: Set B n=67: Set C
Print Postnet Bar Code Data	ASCII: ESC DLE C n [data] Dec: 27 16 67 n [data] Hex: 1B 10 43 n [data]	n=amount of data (in bytes) to follow: n=1 to 20 Data consists of single-digit numbers (0 to 9).
Print Bar Code	ASCII: ESC (B Ln Hn k m S v1 v2 c DATA Dec: 27 40 66 Ln Hn k m S v1 v2 c DATA Hex: 1B 28 42 Ln Hn k m S v1 v2 c DATA	Select Barcode type and Print Barcode. Ln Hn: number of parameter, number of parameter=Ln + Hn x 256 k: Barcode type 00=EAN13, 1=EAN8, 2=I20f5, 3= UPC-A, 4= UPC-E, 5=Code39, 6= Code128, 7= Postnet m: module width (black and white bar), 2= 2 dots, 3= 3 dots, 4= 4 dots, 5= 5 dots (unit: 1/180") s: adjustment of white bar, FDH=-3, FEH=-2, FFH=-1, 00H=0, 01H=+1, 02H=+2, 03H=+3 (unit: 1/360") v1, v2: specifies the height, height= v1+v2x256 (unit: 15/180") c: control information bit0 check digit 0: no, 1= yes bit1 human-readable character 0: yes, 1= no DATA: barcode data

Epson Function	Commands (ASCII, Decimal, Hexadecimal)	Notes
Print Features		
Utility / LQ Selection	ASCII: ESC x n Dec: 27 120 n Hex: 1B 78	n=0: Utility printing n=1: NLQ printing
Select Draft Font	ASCII: ESC y n Dec: 27 121 n Hex: 1B 79 n	Select Draft Font type. n= 0: Utility n= 1: HSD
Select LQ Typeface	ASCII: ESC k n Dec: 27 107 n Hex: 1B 6B n	n=0: Roman n=1: Swiss n=2: Courier n=3: Prestige n=7: Orator n=122: Swiss Bold n=124: Gothic n=126: MENU setting
Select font by pitch and point	ASCII: ESC X m n_1 n_2 Dec: 27 88 m n_1 n_2 Hex: 1B 58 m n_1 n_2	Selects Multipoint (scalable font) mode. Printable font is selected by character pitch and point Character pitch m=0: unchanged m=1: Proportional m>5: m /360 inch Point size=(n_1 + [n_2 x 256]) x 0.5 point Point size can be selected between a minimum of 8 point to a maximum of 64 point.

Epson Function	Commands (ASCII, Decimal, Hexadecimal)	Notes
Proportional Spacing	ASCII: ESC p n Dec: 27 112 n Hex: 1B 70 n	See also ESC ! n command. n=1: Start proportional spacing n=0: Stop proportional spacing
Select 10 cpi Pitch (Pica)	ASCII: ESC P Dec: 27 80 Hex: 1B 50	Normally, selects 10 cpi (Pica). In compressed mode, selects 17.1 cpi.
Select 12 cpi Pitch (Elite)	ASCII: ESC M Dec: 27 77 Hex: 1B 4D	Normally, selects 12 cpi (Elite). In compressed mode, selects 20 cpi.
Select 15 cpi Pitch	ASCII: ESC g Dec: 27 103 Hex: 1B 67	Selects 15 cpi pitch.
Select Compressed Print	ASCII: SI or ESC SI Dec: 15 or 27 15 Hex: 0F or 1B 0F	Pitch depends on current pitch selected: 10 cpi becomes 17.1 cpi 12 cpi becomes 20 cpi
Cancel Compressed Print	ASCII: DC2 Dec: 18 Hex: 12	Cancels 15 cpi print selected by SI or ESC SI command.
Set Character Spacing	ASCII: ESC SP n Dec: 27 32 n Hex: 1B 20 n	Adds n dots of space (depending on the current pitch) between characters. n=0 to 127
Select horizontal motion index (HMI)	ASCII: ESC c n_1 n_2 Dec: 27 99 n_1 n_2 Hex: 1B 63 n_1 n_2	Sets the amount of space between characters (HMI). HMI= $(n_1 + [n_2 \times 256]) / 360$ inch. The specification is invalid if HMI exceeds 3 inches. The command is invalid when $n_1 = n_2 = 0$.
Select Italic Characters	ASCII: ESC 4 Dec: 27 52 Hex: 1B 34	See also ESC !, ESC 7.
Cancel Italics	ASCII: ESC 5 Dec: 27 53 Hex: 1B 53	Clears italic printing engaged by ESC 4 command.

Epson Function	Commands (ASCII, Decimal, Hexadecimal)	Notes
Score (Lines) Selection	ASCII: ESC (- j h l n_1 n_2 Dec: 27 40 45 j h l n_1 n_2 Hex: 1B 28 2D j h 0 l n_1 n_2	Selects underline, strike-through, or overscore. jand h specify amount of data to follow, calculated as j + h x 256 n_1= 1: Start underline n_1= 2: Start strike through n_1= 3: Start overscore n_2= 0: Cancel score mode selected by n_1 n_2= 1: Start single continuous line n_2= 2: Start double continuous line n_2= 5: Start single dashed line n_2= 6: Start double dashed line
Turn Underlining on/ off	ASCII: ESC - n Dec: 27 45 n Hex: 1B 2D n	Underlines all text except tabs. n= 1: Start underlining n= 0: Stop underlining
Start Superscript/ Subscript	ASCII: ESC S n Dec: 27 83 n Hex: 1B 53 n	n= 0: Start superscript n= 1: Start subscript
Stop Superscript/ Subscript	ASCII: ESC T Dec: 27 84 Hex: 1B 54	n= 0: Normal n= 1: Outline n= 2: Shadow n= 3: Outline with shadow
Select Character Style (normal, shadow, out-line, outline& shadow)	ASCII: ESC q n Dec: 27 113 n Hex: 1B 71 n	
Start Emphasized Printing	ASCII: ESC E Dec: 27 69 Hex: 1B 45	Prints horizontally shifted double dots in utility mode at half speed. See also ESC ! command. Override MENU until Initialize, Soft-ware I-PRIME or Change Emulation command is received, or until printer is turned off.
Stop Emphasized Printing	ASCII: ESC F Dec: 27 70 Hex: 1B 46	Clears emphasized printing engaged by ESC E command.
Start Enhanced (Double Strike) Printing	ASCII: ESC G Dec: 27 71 Hex: 1B 47	Prints vertically shifted double dots in two passes. See also ESC ! command.

Epson Function	Commands (ASCII, Decimal, Hexadecimal)	Notes
Stop Enhanced Printing	ASCII: ESC H Dec: 27 72 Hex: 1B 48	Clears double strike printing set by ESC G command.
Double Width (Expanded) Printing	ASCII: ESC W n Dec: 27 87 n Hex: 1B 57 n	n= 1: Start double width printing n= 0: Stop double width printing
Immediate Double Width	ASCII: SO or ESC SO Dec: 14 or 27 14 Hex: 0E or 1B oE	Prints double width only to end of line: can also be canceled by DC4, ESC W 0 and ESC ! commands.
Stop Immediate Double Width Printing	ASCII: DC4 Dec: 20 Hex: 14	Only cancels double width set by SO or ESC SO.
Double Height Printing	ASCII: ESC w n or ESC US n Dec: 27 119 n or 27 31 n Hex: 1B 77 n or 1B 1F n	OKI unique command n= 1: Start double height n= 0: Stop double height
Graphics, 8 & 24-pin Mode For all graphics commands the number of dot columns of graphic data is as follows: dots= n_1 + (n_2 x 256)		
Graphics Select/ Print	ASCII: ESC * m n_1 n_2[graphic data] Dec: 27 42 m n_1 n_2[graphic data] Hex: 1B 2A m n_1 n_2[graphic data]	Selects 8-pin and 24-pin graphic modes and prints graphic data. m= 0: Single density, 8-pin 60 dpi m= 1: Double density, 8-pin, 120 dpi m= 2: Double speed, double density, 8-pin, quasi-120 dpi (dots can not be printed directly adjacent to one another) m= 3: Quadruple density, 8-pin, quasi-240 dpi (dots can not be printed directly adjacent to one another) m= 4: CRT I, 8-pin, 80 dpi m= 6: CRT II, 8-pin, 90 dpi m= 32: Single density, 24-pin, 60 dpi m= 33: Double density, 24-pin, 120 dpi m= 38: CRT III, 24-pin, 90 dpi m= 39: Triple density, 24-pin, 180 dpi m= 40: Hex-density, 24-pin, quasi-360 dpi (dots can not be printed directly adjacent to one another)

Epson Function	Commands (ASCII, Decimal, Hexadecimal)	Notes
		n_1, n_2= 0 to 255: specifies amount of subsequent Bit Image bytes received, calculated as $n_1 + (n_2 \times 256)$
Graphics, 8 -pin Mode		
Single Density Graphics	ASCII: ESC K n_1 n_2 [graphic data] Dec: 27 75 n_1 n_2 [graphic data] Hex: 1B 4B n_1 n_2 [graphic data]	Dot density 60 dpi horizontal, 72 dpi vertical. Maximum data per line: ML390 Turbo=480: ML391 Turbo=816 n_1, n_2= 0 to 255: specifies amount of subsequent Bit Image bytes received, calculated as $n_1 + (n_2 \times 256)$
Double Density Graphics	ASCII: ESC L n_1 n_2 [graphic data] Dec: 27 76 n_1 n_2 [graphic data] Hex: 1B 4C n_1 n_2 [graphic data]	Dot density 120 dpi horizontal, 72 dpi vertical. Maximum data per line: ML390 Turbo= 960: ML391 Turbo= 1632 n_1, n_2= 0 to 255: specifies amount of subsequent Bit Image bytes received, calculated as $n_1 + (n_2 \times 256)$
Quasi Double Density Graphics	ASCII: ESC Y n_1 n_2 [graphic data] Dec: 27 89 n_1 n_2 [graphic data] Hex: 1B 59 n_1 n_2 [graphic data]	Same as double density graphics (120 dpi), but printer can't put two adfacent dots in the same row.
Quadruple Density Graphics	ASCII: ESC Z n_1 n_2 [graphic data] Dec: 27 90 n_1 n_2 [graphic data] Hex: 1B 5A n_1 n_2 [graphic data]	Dot density 240 dpi horizontal, 72 dpi vertical. Printer can't put two adjacent dots in the same row. Maximum data per line: ML390 Turbo=1920: ML391 Turbo=3264 n_1, n_2= 0 to 255: specifies amount of subsequent Bit Image bytes received, calculated as $n_1 + (n_2 \times 256)$
Reassign Graphics	ASCII: ESC ? m n Dec: 27 63 m n Hex: 1B 3F m n	Converts ESC K, ESC L, ESC Y, or ESC Z command to a graphics select command: For ESC K: m=75 For ESC L: m=76 For ESC Y: m=89 For ESC Z: m=90 n=0: Single density, 60 dpi n=1: Double density, 120 dpi

Epson Function	Commands (ASCII, Decimal, Hexadecimal)	Notes
		n=2: Double speed, double density, quasi- 120 dpi (adjacent dots can not be printed) n=3: Quadruple density, quasi- 240 dpi (adjacent dots can not be printed) n=4: CRT I, 80 dpi n=6: CRRT II, 90 dpi n=38: CRT III, 90 dpi
Composite Command	ASCII: ESC ! n DEc: 27 33 n Hex: 1B 21 n	Calculate n as the sum of the values of the features to be activated. If a feature's value is not included in the sum, it will be *deactivated*. n=0: 10 cpi n=1: 12 cpi n=2: Proportional spacing n=4: Compressed n=8: Emphasized n=16: Enhanced n=32: Double Width n=64: Italics n=128: Underlining
Miscellaneous		
Select emulation mode	ASCII: ESC { n Dec: 27 123 n Hex: 1B 7B n	OKI unique command. Switches printer emulation mode, copying the custom character data in buffer and saving the print and receive buffers. MENU settings unaffected. n=0: IBM mode (general) n=2: IBM X24e PPR, XL24e PPR n=3: IBM X24e AGM, XL24e AGM n=64: Epson mode (general) n=66: Epson LQ 850, LQ 1050
Initialize printer	ASCII: ESC @ Dec: 27 64 Hex: 1B 40	Clears print buffer (receive buffer unaffected), resets printer to *menu* defaults, current position becomes top of page. Custom character data is not touched. This command is acknowledged only if Reset Inhibit in MENU is set to " No" (factory default).
Cancel	ASCII: CAN Dec: 24 Hex: 18	Clears print buffer (receive buffer unaffected) and executes carriage return; commands and custom character data unaffected.

Epson Function	Commands (ASCII, Decimal, Hexadecimal)	Notes
Set Most Significant Bit (MSB) to 1	ASCII: ESC > Dec: 27 62 Hex: 1B 3E	Set the MSB (8th bit) to 1.
Set Most Significant Bit (MSB) to 0	ASCII: ESC = Dec: 27 61 Hex: 1B 3D	Sets the MSB (8th bit) to 0.
Reset Most Significant Bit (MSB)	ASCII: ESK # Dec: 27 35 Hex: 1B 23	Cancels ESC > or ESC =. MSB accepted "as is" from computer.
Print Suppress Mode On	ASCII: DC3 Dec: 19 Hex: 13	Places printer in Print Suppress Mode after printing data in print buffer. Ignores all further commands except DC1 command. Print Suppress Effective item in MENU must be set to "Yes" for this command to be acknowledged.
Print Suppress Mode Off	ASCII: DC1 Dec: 17 Hex: 11	Clears Print Suppress Mode, re-activating printer to once again process all data received.
Disable Paper-Out Sensor	ASCII: ESC 8 Dec: 27 56 Hex: 1B 38	OKI unique command. Disables paper-out sensor, even if Paper Out Override in MENU is set to "On" the (factory default). If data flows onto next page and reaches top of form setting for that page, printer ALARM light will come on to indicate paper-out error.
Enable Paper-Out Sensor	ASCII: ESC 9 Dec: 27 57 Hex: 1B 39	OKI unique command. Enables paper-out sensor to detect when less than $1/2$ inch of paper is left. When ALARM light is on, pressing SELECT prints 1 line of data at a time until the top of form setting for the next page is reached. Sensor can also be controlled by the menu.
Half-Speed Printing On/ Off	ASCII: ESC s n Dec: 27 115 n Hex: 1B 73 n	Prints at 50% of normal speed to reduce noise. n=1: Half-speed printing On n=0: Half-speed printing Off

Epson Function	Commands (ASCII, Decimal, Hexadecimal)	Notes
Software I-Prime	ASCII: ESC } NUL Dec: 27 125 0 Hex: 1B 7D 00	OKI unique command. Clears data in print buffer (receive buffer unaffected); resets printer to menu default if applicable, non-menu features returned to factory default. Executes paper eject in Cut Sheet Feeder mode.
Set unit	ASCII: ESC (U n_1 n_2 m Dec: 27 40 85 n_1 n_2 m Hex: 1B 28 55 n_1 n_2 m	Sets the basic unit of horizontal and vertical lengths. n_1=1, n_2=0: specifies the number of parameters (in bytes) to follow The commands affected by this command are: ESC (V, ESC (v, ESC \, ESC $, ESC (C, ESC (c.
Set/ Reset Incremental Print Mode	ASCII: ESC i n Dec: 27 105 n Hex: 1B 69 n	Sets the Incremental print mode n=0: Reset Incremental print mode n=1: Set Incremental print mode
Raster Graphics Select graphics mode	ASCII: ESC (G n_1 n_2 m Dec: 27 40 71 n_1 n_2 m Hex: 1B 28 47 n_1 n_2 m n_1=1,	Sets the raster graphics mode. n_2=0: specifies the number of parameters (in bytes) to follow This command can be deactivated by ESC @ (printer initialization). The raster graphics command ESC is valid only while in this mode. The printer is initialized by this command.

Epson Function	Commands (ASCII, Decimal, Hexadecimal)	Notes
Turn raster graphics mode ON / OFF	ASCII: ESC DLE G P_{n0} P_n Dec: 27 16 71 P_{n0} P_n Hex: 1B 10 47 P_{n0} P_n	OKI unique command. Activates and deactivates raster graphics mode. P_{n0}=1: specifies the number of parameters (in bytes) to follow P_n=odd number: raster graphics mode activated P_n=even number: raster graphics mode deactivated
Print raster graphics	ASCII: ESC . P_c P_v P_h P_m n_1 n_2 [data] Dec: 27 46 P_c P_v P_h P_m n_1 n_2 [data] Hex: 1B 2E P_c P_v P_h P_m n_1 n_2 [data]	Input data is printed with bit pattern in horizontal direction. P_c: mode setting $\quad P_c$=0: full graphics mode $\quad P_c$=1: compressed mode P_v: vertical direction dot density setting $\quad P_v$=10: 3600/$P_v \rightarrow$ 360 DPI $\quad P_v$=20: 3600/$P_v \rightarrow$ 180 DPI P_h: horizontal direction dot density setting $\quad P_h$=10: 3600/$P_h \rightarrow$ 360 DPI $\quad P_h$=20: 3600/$P_h \rightarrow$ 180 DPI P_m: horizontal direction dot number $\quad$Horizontal direction dot number=n_1 + [n_2 x 256] $\quad$The command is ignored when P_v=10 and P_h=20.

Appendix D: Commands–IBM Emulation

This appendix contains the commands for the IBM X24e / XL24e Proprinter and X24e AGM / XL24e AGM emulations, grouped by function.

Normally the commands in this table override Menu settings. Except as noted, these commands are cancelled and the printer returns to factory and Menu settings when the printer receives an Initialization, Software I-Prime, or Change Emulation command, or when it is turned off and then on again.

IBM Function	Commands (ASCII, Decimal, Hexadecimal)	Notes
Horizontal Control		
Carriage Return	ASCII: CR Dec: 13 Hex: 0D	Prints data in buffer and performs carriage return.
Set Horizontal Tabs	ASCII: ESC D n_1 n_2 ⋯ n_k NUL Dec: 27 68 n_1 n_2 ⋯ n_k 0 Hex: 1B 44 n_1 n_2 ⋯ n_k 00	Sets horizontal tab stop positions. n=1 to 255: specifies position of tab stop - maximum is number of characters per line k=1 to 28; n_1=0: clear tabs Default: every 8 columns
Horizontal Tab	ASCII: HT Dec: 9 Hex: 09	Move to next horizontal tab stop
Reset Tabs to Default	ASCII: ESC R Dec: 27 82 Hex: 1B 52	Reset horizontal tabs for default: every 8th character. Also resets vertical tabs to default of 1 line.

IBM Function	Commands (ASCII, Decimal, Hexadecimal)	Notes
Move to the Left (Backwards)	ASCII: ESC e n_1 n_2 Dec: 27 101 n_1 n_2 Hex: 1B 65 n_1 n_2	Move to the left, relative to present position, calculated as $(n_1 = [n_2 \times 256]) / 120$ inches $n_1 = 0$ to 255 $n_2 = 0$ to 255 $n_1 = n_2 = 0$: no movement
Self Left & Right Margins	ASCII: ESC X n m Dec: 27 88 n m Hex: 1B 58 n m	Sets left (n) and right (m) margins in character columns at current pitch. Once set, margins remain fixed even if character pitch is changed. m must be at least 10 character space (at 10 cpi) to the right of n. n=0 to 255; n=0: left margin unchanged m=0 to 255; m=0: right margin unchanged
Engage/ Disengage Unidirectional Printing	ASCII: ESC U n Dec: 27 85 n Hex: 1B 55 n	n=1: Unidirectional printing On n=0: Unidirectional printing Off (return to bidirectional)
Backspace	ASCII: BS Dec: 8 Hex: 08	Prints data in buffer and moves one character to the left according to current character pitch.
Set Print Position	ASCII: ESC DLE @ P_n A_1 A_2 P_1 P_2 P_3 P_4 Dec: 27 16 64 [data] Hex: 1B 10 40 [data]	OKI unique command. Sets horizontal position of printhead. P_n: specifies number of bytes to follow, range 0 to 127 (MSB ignored) A_1: specifies if motion is absolute (even number) or relative (odd number) A_2: specifies direction of relative movement right (even number) or left (odd number) P_1, P_2, P_3, P_4=0 to 9: specify print position, in four digits: $(P_1 \times 1000) + (P_2 \times 100) + (P_3 \times 10) + P_4$ Unit of print position is $1/360$ inch in LQ mode; $1/240$ inch in Utility mode. Maximum default value for left and right margins: 2880 for ML390 Turbo: 4896 for ML 391 Turbo

IBM Function	Commands (ASCII, Decimal, Hexadecimal)	Notes
Vertical Control		
Set $1/8$-inch Line Spacing	ASCII: ESC 0 Dec: 27 48 Hex: 1B 30	$1/8$-inch Line Spacing=8 lines per inch.
Set $7/72$-inch Line Spacing	ASCII: ESC 1 Dec: 27 49 Hex: 1B 31	This is the line spacing used for graphics.
Activate Line Spacing	ASCII: ESC 2 Dec: 27 50 Hex: 1B 32 n	This command is required to activate the line spacing set by the ESC A n command (see below).
Set $n/72$-inch or $n/60$-inch Line Spacing	ASCII: ESC A n Dec: 27 65 n Hex: 1B 41 n	In PPR emulation, sets and stores $n/72$-inch line spacing; in AGM emulation, sets and stores $n/60$-inch line spacing. The ESC 2 command must be sent to initiate the line spacing change. n=1 to 255 n=0: no change in line sapcing.
Set $n/360$-inch Line Spacing	ASCII: ESC % 8 n Dec: 27 37 56 n Hex: 1B 25 38 n	OKI unique command. Sets line spacing to n/360-inch. n=1 to 255 n=0: no line feed
Set $n/216$-inch or $n/180$-inch Line Spacing	ASCII: ESC 3 n Dec: 27 51 n Hex: 1B 33 n	For PPR emulation, sets $n/216$-inch line spacing; for AGM emulation, sets $n/180$=inch line spacing. n=1 to 255 n=0: command is ignored
Line Feed	ASCII: LF Dec: 10 Hex: 0A	Prints buffer data and moves printhead down by current by current line spacing value. In PPR emulation, performs carriage return only if Auto CR in MENU has been changed to Yes (factory default is No). In AGM emulation performs carriage return regardless of Auto CR setting.
Reverse Line Feed	ASCII: ESC] Dec: 27 93 Hex: 1B 5D	Prints buffer data and performs one reverse line feed at the current line spacing. Movement will not go above top of form. Not recommended for use with optional pull tractor.

IBM Function	Commands (ASCII, Decimal, Hexadecimal)	Notes
Automatic Line Feed Control	ASCII: ESC 5 Dec: 27 53 n Hex: 1B 35 n	n=Odd: Line feed automatically added to each CR (carriage return) n=Even: auto line feed turned Off
$n/360$-inch Line Feed	ASCII: ESC % 4 n Dec: 27 37 52 n Hex: 1B 25 34 n	OKI unique command. Prints data in buffer and executes a single $n/360$-inch line feed without changing line spacing. n=1 to 255 n=0: no line feed
$n/216$-inch or $n/180$-inch Line Feed	ASCII: ESC J n Dec: 27 74 n Hex: 1B 4A n	In PPR emulation, prints data in buffer and executes a single $n/216$-inch line feed: in AGM emulaiton, executes a single $n/180$-inch line feed, both without changing line spacing. Carriage Return determined by menu setting. n=1 to 255 n=0: no line feed
Form Feed	ASCII: FF Dec: 12 Hex: 0C	Prints data in buffer and advances paper to next top of form. With Cut Sheet Feeder installed, will eject or insert paper depending on status of feeder.
Vertical Tab	ASCII: VT Dec: 11 Hex: 0B	Print buffer data and move to next vertical tab stop.
Set Vertical Tab Stops	ASCII: ESC B n_1 n_2 $\cdots$ n_k NUL Dec: 27 66 n_1 n_2 $\cdots$ n_k 0 Hex: 1B 42 n_1 n_2 $\cdots$ n_k 00	Sets vertical tab stops at specified lines. k=1 to 64: number of tabs n=1 to 255: line number where tabs is to be set
Set Form Length in Inches	ASCII: ESC C NUL n Dec: 27 67 0 n Hex: 1B 43 00 n	Sets page length in inches. n=1 to 255 inches n=0: Command ignored This command cancels Skip Over Perforation setting.

IBM Function	Commands (ASCII, Decimal, Hexadecimal)	Notes
Set Form Length in Lines	ASCII: ESC C n Dec: 27 67 n Hex: 1B 43 n	Sets page length in lines, relative to currently selected line spacing, calculated by multiplying value of n by line spacing ratio. n=1 to 255 This command cancels Skip Over Perforation setting.
Set Skip Over Perforation	ASCII: ESC N n Dec: 27 78 n Hex: 1B 4E n	Activates Skip Over Perforation feature and sets it for n lines at the current line spacing. When the printer reaches the bottom of the page, it will skip n lines to next top of form. Command overrides menu. n=1 to 255 lines n=0: command ignored
Cancel Skip Over Perforation	ASCII: ESC O Dec: 27 79 Hex: 1B 4F	Deactivates Skip Over Perforation. Command override menu.
Set Top of Form	ASCII: ESC 4 Dec: 27 52 Hex: 1B 34	Sets top of form at current printhead position. Command ignored in CSF or Auto-Feed mode.
Cut Sheet Feeder (Option)		
Cut Sheet Feeder Control	ASCII: ESC EM n Dec: 27 25 n Hex: 1B 19 n	OKI unique command. Controls Cut Sheet Feeder accessory. n=1: Select bin 1 n=2: Select bin 2 (if present) n=73 (ASCII "I"): Insert sheet n=82 (ASCII "R"): Eject sheet

IBM Function	Commands (ASCII, Decimal, Hexadecimal)	Notes
Character Sets Select Code Page	ASCII: ESC [T1h NUL NUL H_{cp} L_{cp} NUL Dec: 27 91 84 1 h 0 0 H_{cp} L_{cp} 0 Hex: 1B 5B 54 1 h 00 00 H_{cp} L_{cp} 00	Selects Code Page 1, h=0 to 255: specify amount of data to follow, calculated as 1 = (h x 256) H_{cp}, L_{cp}=0 to 255: specifies Code Page ID No., calculated as 1 + (Hcp x256)+L_{cp} ID No.=437: USA ID No.=850: Multilngual ID No.=860: Portugal ID No.=863: Canadian French ID No.=865: Norway ID No.=1040: BRASCII ID No.=1041: Abicomp
Select International Character Set	ASCII: ESC ! n Dec: 27 33 n Hex: 1B 21 n	OKI unique command. Select character set containing special characters used in foreign language printing: n=64: US ASCII, slashed zero n=65: US ASCII (unslashed zero) n=66: British n=67: German n=68: French n=69: Swedish n=70: Danish n=71: Norwegian n=72: Dutch n=73: Italian n=74: French Canadian n=75: Spanish n=76: Latin American n=90: Publisher
Print from IBM Character Set III	ASCII:ESC \ n_1 n_2 Dec: 27 92 n_1 n_2 Hex: 1B 5C n_1 n_2	This character set includes printable characters for commands. Specify total number of characters to be printed, calculated as n_1 + (n_2 x 256).
Print One Character from IBM Character Set III	ASCII: ESC ^ n Dec: 27 94 n Hex: 1B 5E n	Prints character n from IBM Character Set III n=0 to 255.

IBM Function	Commands (ASCII, Decimal, Hexadecimal)	Notes
Select IBM Character Set I	ASCII: ESC 7 Dec: 27 55 Hex: 1B 37	Selects IBM Character Set I
Select IBM Character Set II	ASCII: ESC 6 Dec: 27 54 Hex: 1B 36	Selects IBM Character Set II
Bar Code Commands		
Select Bar Code Type and Size	ASCII: ESC DLE A m $n_1 \cdots n_8$ Dec: 27 16 65 m $n_1 \cdots n_8$ Hex: 1B 10 41 m $n_1 \cdots n_8$	OKI unique command m=number of parameters specified (m=0, 1 or 3: command ignored) n_1, n_2: selects bar code style n_1, n_2=0, 1: EAN8 n_1, n_2=0, 2: EAN13 n_1, n_2=1, 0: UPC-A n_1, n_2=1, 4: UPC-E n_1, n_2=2, 0: CODE39 n_1, n_2=3, 0: Interleaved 2 of 5 n_1, n_2=4, 0: Code 128 n_3, n_4: sets vertical length of bars, in units of $^{15}/_{180}$-inch, calculated as ($[n_3 \times 10] + n_4) \times {}^{15}/_{180}$" n_5: sets black bars; n_5=1 to 7 n_6: sets spacing; n_6=1 to 7 n_7: sets ratio of wide element to narrow element; n_7=1 to 7 n_8: specifies whether or not characters are to be attached n_8=0: characters not attached n_8=1 or more: LQ characters attached
Print Industrial Bar Code Data	ASCII: ESC DLE B n m [data] Dec: 27 16 66 n m [data] Hex: 1B 10 42 n m [data]	OKI unique command n: specifies amount of data to follow m: selects CODE128 mode (CODE128 must be selected for this command to be recognized) m=65: Set A m=66: Set B m=67: Set C

IBM Function	Commands (ASCII, Decimal, Hexadecimal)	Notes
Print Postnet Bar Code Data	ASCII: ESC DLE C n [data] Dec: 27 16 67 n [data] Hex: 1B 10 43 n [data]	OKI unique command. n: designates amount of data to follow n=1 to 20 Data consists of single-digit numbers.
Select Barcode type	ASCII: ESC [f Ln Hn Pk Pm Ps Lv Hv Pc 16-digit: 1B 5B 66 Ln Hn Pk Pm Ps Lv Hv Pc 10-digit: 27 91 102 Ln Hn Pk Pm Ps Lv Hv Pc	Specifies the barcode setting. Ln Hn specifies the byte number of parameter. byte number of parameter = Ln+Hn x 256 Pk: Barcode type

Pk (Hex)	Barcode type
B2	EAN-13
B3	EAN-8
B4	Code 39
B6	Interleaved 2 of 5
B7	UPC-A
B9	POSTNET
BA	Code 128

Pm: specifies the module width (black or SP bar).

Pm (Hex)	Module width (unit: 1/180")
00	2 dots
01	1 dot
02	2 dots
03	3 dots
04	4 dots

Ps: specifies the PS bar width based on the parameter Pm setting.

Ps (Hex)	regulable value for the standard width of the SP bar.
FD	-3
FE	-2
FF	-1
00	0 (factory default)
01	+1
02	+2
03	+3

Lv Hv: specifies the height of the black bar (unit: 1/2160")
Height=Lv+Hv x 256
Lv Hv setting will be ignored for Pk=07H (when POSTNET specified)

IBM Function	Commands (ASCII, Decimal, Hexadecimal)	Notes
		Pc: specifies the control information.
		Pc: specifies the control information. | Pc	Description
---	---
bit0	sets the check digit.
	0: does not add check digit.
	1: add check digit.
bit1	sets the human-readable character.
	0: performs print.
	1: does not perform print.
bit2	(reserved)
bit3	(reserved)
bit4	(reserved)
bit5	(reserved)
bit6	(reserved)
bit7	(reserved)	
Print Barcode	ASCII: ESC [f Ln Hn DATA 16-digit: 1B 5B 70 Ln Hn DATA 10-digit: 27 91 112 Ln Hn DATA	Prints the barcode. Ln Hn: indicates the byte number (= Ln+Hn x 256) of the parameter located after Ln Hn DATA: Barcode data
Print Features		
Select LQ Typeface	ASCII: ESC k n Dec: 27 107 n Hex: 1B 6B n	OKI unique command. Selects typeface according to value of n: n=0: Roman n=1: Swiss n=2: Courier n=3: Prestige n=4: Script n=5: OCR-B n=6: OCR-A n=7: Orator n=8: Orator-S n=122: Swiss Bold n=124: Gothic
Select Font	ASCII: ESC [I j h H_{fid} L_{fid} H_{fwd} L_{fwd} fa Nul Hc Lc Dec: 27 91 73 j h H_{fid} L_{fid} H_{fwd} L_{fwd} fa Nul Hc Lc Hex: 1B 5B 49 j h H_{fid} L_{fid} H_{fwd} L_{fwd} fa Nul Hc Lc	Sets the font typeface, character width and spacing attributes. j, h: set number of parameters to follow, calculated as j + (h x 256) bytes j, h=0 or1: command invalid j, h=2, 3: fid setting valid, other modes unchanged j, h=4: fid, fwd settings valid; fa unchanged j, h=5: all settings valid j, h=6 or more: all settings and parameter data beyond 6 bytes will be ignored

IBM Function	Commands (ASCII, Decimal, Hexadecimal)	Notes
		H_{fid}, L_{fid}: sets font typeface, calculated as ($H_{fid}.L_{fid}$=(H_{fid} x 256) + L_{fid} H_{fwd}, L_{fwd}: Sets character width (cpi), calculated as H_{fwd}, L_{fwd}=(H_{fwd} x 256) + L_{fwd} fa: sets spacing attribute; n=2: prints Proportional; n=any other value, cpi set by H_{fwd}, L_{fwd} Hc Lc: Code page setting, ID=Hc x 256+Lc

Code page ID (Hex)	Code page name
1B5	USA
352	Multilingual
35A	Multilingual 858
35C	Portugal
35F	Canada French
361	Norway
410	BRASCII
411	Abicomp
439	ISO 8859-15

IBM Function	Commands (ASCII, Decimal, Hexadecimal)	Notes
Select Print Quality	ASCII: ESC [d Ln Hn Pn 16-digit: 1B 5B 64 Ln Hn Pn 10-digit: 27 91 100 Ln Hn Pn	Specifies the Print Quality setting. Ln Hn specifies the number of parameter (Ln, Hn). Number of parameter= Ln+Hn x 256 Pn: Parameter Quality setting

Pn	
00H	invalid
01H-3FH	HSD
40H-7FH	Utility
80H-FEH	LQ
FFH	(depending on the menu settings)

IBM Function	Commands (ASCII, Decimal, Hexadecimal)	Notes
Select font by pitch and point	ASCII: ESC DLE F P_{n0} m n_1 n_2 Dec: 27 16 70 P_{n0} m n_1 n_2 Hex: 1B 10 46 P_{n0} m n_1 n_2	Sets the Multipoint (scalable font) mode. Printable font is selected by character pitch and point. P_{n0}=3: specifies the number of parameters (in bytes) to follow Character Pitch m=0: unchanged m=1: Proportional m>5: m/360 inch Point size=(n_1 + [n_2 x 256]) x 0.5 point Point size can be selected between a minimum of 8 point to a maximum of 64 point.

IBM Function	Commands (ASCII, Decimal, Hexadecimal)	Notes
Proportional Spacing	ASCII: ESC P n Dec: 27 80 n Hex: 1B 50 n	Engages/ cancels proportional spacing n=0 to 255: n is odd number: start proportional spacing n is even number: stop proportional spacing When printer is in utility mode, this command will switch it to LQ proportional until it is canceled.
Set 10 Cpi Pitch	ASCII: DC2 Dec: 18 Hex: 12	This is standard pica typewriter size.
Set 12 Cpi Pitch	ASCII: ESC : Dec: 27 58 Hex: 1B 3A	Changes to 12 cpi except if Menu item "SI Select (12 CPI)" is set to "20", then ESC: will change 17.1 cpi to 20 cpi and will not change 20 cpi.
Set 15 Cpi Pitch	ASCII: ESC g Dec: 27 103 Hex: 1B 67	OKI unique command. Sets 15 cpi.
Set Compressed Pitch	ASCII: SI Dec: 15 hex: 0F	Condenses cpi as follows (depending on MENU setting for SI Select Pitch): 10 cpi: 15 cpi for SI=10; 17.1 for SI=12 12 cpi: 12 cpi for SI=10; 20 cpi for SI=12 15 cpi: 15 cpi for SI=10; 17.1 cpi for SI=12 17.1 cpi: 15 cpi for SI=10; 17.1 cpi for SI=12 20 cpi: 15 cpi for SI=10;17.1 cpi or 20 cpi for SI=12
Set 20 Cpi Pitch	ASCII: ESC SI Dec: 27 15 Hex: 1B 0F	OKI unique command.
Select pitch printer mode, and ROM versus RAM character generator.	ASCII: ESC I n Dec: 27 73 n Hex: 1B 49 n	Selects character font according to the value of n: n=0: 10 cpi, utility (UTL), ROM n=2: 10 cpi, letter quality (LQ), ROM n=3: Proportional, LQ, ROM n=8: 12 cpi, UTL, ROM n=10: 12 cpi, LQ, ROM n=12: 12 cpi, LQ, ROM n=16: 17 cpi, UTL, ROM n=18: 17 cpi, LQ, ROM

IBM Function	Commands (ASCII, Decimal, Hexadecimal)	Notes
		n=24: 15 cpi, UTL, ROM
		n=26: 15 cpi, LQ, ROM
		n=32: 20 cpi, UTL, ROM
		n=34: 20 cpi, LQ, ROM
Start Italic Printing	ASCII: ESC % G Dec: 27 37 71 Hex: 1B 25 47	OKI unique command. Italic characters may overlap slightly.
Stop Italic Printing	ASCII: ESC % H Dec: 27 37 72 Hex: 1B 25 48	OKI unique command. Cancels italic printing engaged by ESC % G command.
Underlining	ASCII: ESC - n Dec: 27 45 n Hex: 1B 2D n	Underlines all text except tabs. n=0 to 255 n=odd: start underlining n=even: stop underlining
Select Score	ASCII: ESC [- Ln Hn P1 P2 16-digit: 1B 5B 2D Ln Hn P1 P2 10-digit: 27 91 45 Ln Hn P1 P2	Selects the score type and its line type. Ln Hn: indicates the byte number (= Ln+Hn x 256) of the parameter located after Ln Hn. P1: selects the score type.

P1: selects the score type.

P1 value specified (Hex)	Score type to be specified.
01	selects the underscore.
02	selects the strikethrough.
03	selects the overscore.

P2: selects the line type for score line specified.

P2 value specified (Hex)	Score type to be specified.
00	selects none.
01	selects the single line.
02	selects the double-line.
03-FEH	selects the single line.
FFH	does not print the score line regardless of the P1 value.

IBM Function	Commands (ASCII, Decimal, Hexadecimal)	Notes
Start Subscript/ Superscript	ASCII: ESC S n Dec: 27 83 n Hex: 1B 53 n	Engages subscript or superscript printing. n=0 to 255 n=odd: start subscript n=even: start superscript
Stop Subscript/ Superscript	ASCII: ESC T Dec: 27 84 Hex: 1B 54	Cancels subscript or superscript printing

IBM Function	Commands (ASCII, Decimal, Hexadecimal)	Notes
Select Character Style	ASCII: ESC q n Dec: 27 113 n Hex: 1B 71 n	Selects character style. n=0: normal n=1: outline n=2: shadow n=3: outline with shadow
Start Emphasized Printing	ASCII: ESC E Dec: 27 69 Hex: 1B 45	Prints horizontally shifted double dots in utility mode at half speed.
Stop Emphasized Printing	ASCII: ESC F Dec: 27 70 Hex: 1B 46	Cancels emphasized printing.
Start Enhanxed (Double strike) Printing	ASCII: ESC G Dec: 27 71 Hex: 1B 47	Prints vertically shifted double dots in two unidirectional passes.
Stop Enhanced Printing	ASCII: ESC H Dec: 27 72 Hex: 1B 48	Cancels enhanced printing.
Double Width (Expanded) Printing	ASCII: ESC W n Dec: 27 87 n Hex: 1B 57 n	n=odd: start double width printing n=even: stop double width printing
Immediate Double Width	ASCII: SO Dec: 14 Hex: 0E	Prints double width only to end of line; can be canceled by DC4 or ESC W 0 command.
Stop Immediate Double Width Printing	ASCII: DC4 Dec: 20 Hex: 14	Cancels double width set by SO command.
Control Double Height/Width	ASCII: ESC [@ l m n_1 n_2 n_3 n_4 Dec: 27 91 64 l m n_1 n_2 n_3 n_4 Hex: 1B 5B 40 l m n_1 n_2 n_3 n_4	Sets double height, double width, or both double height and double width l=0 to 255 m=0 to 255 n_1, n_2 ignored n_3: specifies character height and line feed n_3=17: single line feed, standard height n_3=34: double line feed, double height n_4: specfied character width n_4=1: standard width n_4=2: double width Command will be ignored when printing bit image graphics.

IBM Function	Commands (ASCII, Decimal, Hexadecimal)	Notes
Overscore	ASCII: ESC _ n Dec: 27 95 n Hex: 1B 5F n	Prints a continuous overscore over all text characters except for tab spaces. n=0 to 255 n=odd: start overscore n=even: stop overscore
Graphics, 8-Pin Mode For all 8-pin graphics commands the number of dot columns of graphic data=$n_1 + (n_2 \times 256)$		
Single Density Graphics	ASCII: ESC K l h [graphics data] Dec: 27 75 l h [graphics data] Hex: 1B 4B l h [graphics data]	Dot density 60 dpi horizontal, 72 dpi vertical. Maximum data per line: ML390 Turbo=480: ML391 Turbo=816 l,h=0 to 255: specifies amount of subsequent Bit Image bytes received, calculated as l + (h x 256).
Double Density Graphics	ASCII: ESC L l h [graphics data] Dec: 27 76 l h [graphics data] Hex: 1B 4C l h [graphics data]	Dot density 120 dpi horizontal, 72 dpi vertical. Maximum data per line: ML390 Turbo=960: ML391 Turbo=1632 l, h=0 to 255: specifies amount of subsequent Bit Image bytes received, calculated as l + (h x256).
Quasi-Double Density Graphics	ASCII: ESC Y l h [graphics data] Dec: 27 89 l h [graphics data] Hex: 1B 59 l h [graphics data]	Same as low speed double density (120 dpi), but printer can't put two adjacent dots in the same row.
Quadruple Density Graphics	ASCII: ESC Z l h [graphics data] Dec: 27 90 l h [graphics data] Hex: 1B 5A l h [graphics data]	Dot density 240 dpi horizontal, 72 dpi vertical. Printer can't put two adjacent dots in the same row. Maximum data per line: ML390 Turbo=1920: ML391 Turbo=3264 l,h=0 to 255: specifies amount of subsequent Bit Image bytes received, calculated as l + (h x 256).
Set Aspect Ratio for Bit Image Graphics	ASCII: ESC n n Dec: 27 110 n Hex: 1B 6E n	In PPR emulation, sets ratio of vertical to horizontal dot density in bit image graphics. Valid only for ESC K, ESC L,

IBM Function	Commands (ASCII, Decimal, Hexadecimal)	Notes
		ESC Y, and ESC Z commands. Ratio is determined by value of variable n: n=0 or 1: 5 horizontal / 6 vertical n=2: 1 horizontal / 1 vertical n=3: Command ignored Invalid (trapped) in IBM AGM emulation.
Graphics, 8 & 24-Pin Mode		
Graphics Select/ Print	ASCII: ESC * m l h [graphics data] Dec: 27 42 m l h [graphics data] Hex: 1B 2A m l h [graphics data]	Selects 8-pin and 24-pin graphic modes and prints graphic data. Valid only for IBM AGM. m=0: Single density, 8-pin, 60 dpi m=1: Double density, 8-pin, 120 dpi m=2: Double speed, double density, 8-pin, quasi-120 dpi (dots can not be printed directly adjacent to one another) m=3: Quadruple density, 8-pin, quasi-240 dpi (dots can not be printed directly adjacent to one another) m=4: CRT I, 8-pin, 80 dpi m=6: CRT II, 8-pin, 90 dpi m=32: Single density, 24-pin, 60 dpi m=33: Double density, 24-pin, 120 dpi m=38: CRT III, 24-pin, 90 dpi m=39: Triple density, 24-pin, 180 dpi m=40: Hex-density, 24-pin, quasi-360 dpi (dots can not be printed directly adjacent to one another). l, h=0 to 255: specifies amount of subsequent Bit Image bytes received, calculated as l + (h x 256)
Graphics Select	ASCII: ESC [g l h m [graphics data] Dec: 27 91 103 l h m [graphics data] Hex: 1B 5B 67 l h m [graphics data]	Selects graphics and prints m=0: Single density, 8-pin, 60 dpi [same as ESC * ()] m=1: Double density, 8-pin, 120 dpi [same as ESC * 1] m=2: Double speed, double density, 8-pin, quasi-120 dpi [same as ESC * 2] m=3: Quadruple density, 8-pin, quasi-240 dpi [same as ESC * 3] m=8: Single density, 24-pin, 60 dpi [same as ESC * 32]

IBM Function	Commands (ASCII, Decimal, Hexadecimal)	Notes
		m=9: Double density, 24-pin, 120 dpi [same as ESC * 33] m=11: Triple density, 24-pin, 180 dpi [same as ESC * 39] m=12: Hex-density, 24-pin, quasi-360 dpi [same as ESC * 40] l, h=0 to 255: specifies amount of subsequent Bit Image bytes received, calculated as l + (h x 256)
Miscellaneous Commands		
Select Emulation Mode	ASCII: ESC { n Dec: 27 123 n Hex: 1B 7B n	OKI unique command. Switches printer emulation mode, copying the custom character data in buffer and saving the print and receive buffers. MENU settings unaffected. n=0: IBM emulation (general) n=2: IBM X24e PPR, XL24e PPR n=3: IBM X24e AGM, XL24e AGM n=64: Epson emulation (general) n=66: Epson LQ 850, LQ 1050
Cancel	ASCII: CAN Dec: 24 Hex: 18	Clears buffer and cancels single double-width set by SO or ESC SO command; does not affect custom characters or other commands.

IBM Function	Commands (ASCII, Decimal, Hexadecimal)	Notes
Print Suppress Mode On	ASCII: ESC Q n Dec: 27 81 n Hex: 1B 16 n	Prints out data in print buffer and puts printer in Print Suppress Mode until DC1 command is received, I-PRIME signal is received, or SEL button is pushed. Command will be ignored unless Print Suppress Effective item in MENU is set to "YES." n=36: Model ML390 Turbo (narrow carriage) n=35: Model ML391 Turbo (wide carriage)
Print Suppress Mode Off	ASCII: DC1 Dec: 17 Hex: 11	Cancels Print Suppress Mode. Printer becomes active, processes all data received.
Stop Printing	ASCII: ESC j Dec: 27 106 Hex: 1B 6A	Deselects the printer. Press SELECT to reactivate. No data is lost.
Disable Paper-Out Sensor	ASCII: ESC 8 Dec: 27 56 Hex: 1B 38	Paper-out sensor is deactivated: printer will print to next top of form before registering paper end error. This command will be ignored if the Paper Out Override in MENU is set to No (the factory default).
Enable Paper-Out Sensor	ASCII: ESC 9 Dec: 27 57 Hex: 1B 39	Sensor detects when less than $1/2$ inch of paper is left. When PAPER OUT light is on, pressing SELECT prints 1 line of data at a time until top of form position on next page is reached. Sensor can also be controlled by the MENU.
Software I-Prime	ASCII: ESC } NUL Dec: 27 125 0 Hex: 1B 7D 00	OKI unique command. Sets the printer to the same state as if it had been shut off and turned back on (print buffer cleared, receive buffer unaffected).
Set/ Reset Incremental Print Mode	ASCII: ESC i n Dec: 27 105 n Hex: 1B 69 n	Sets the Incremental print mode n=0: Reset Incremental print mode n=1: Set Incremental print mode

Appendix E: ASCII Character Codes

ASCII Character Sets

Hex.	Dec.	Epson Sets 1 & 2	IBM Set 1	IBM Set 2	IBM Set 3
00	0	NUL	NUL	NUL	∅
01	1				☻
02	2				●
03	3				♥
04	4				♦
05	5				♣
06	6				♠
07	7				•
08	8	BS	BS	BS	◘
09	9	HT	HT	HT	○
0A	10	LF	LF	LF	■
0B	11	VT	VT	VT	♂
0C	12	FF	FF	FF	♀
0D	13	CR	CR	CR	♪
0E	14	SO	SO	SO	♫
0F	15	SI	SI	SI	☼
10	16				►
11	17	DC1	DC1	DC1	◄
12	18	DC2	DC2	DC2	↕
13	19	DC3	DC3	DC3	‼
14	20	DC4	DC4	DC4	¶
15	21				§
16	22				▬
17	23				↨
18	24	CAN	CAN	CAN	↑
19	25	EM	EM	EM	↓
1A	26				→
1B	27	ESC	ESC	ESC	←
1C	28				∟
1D	29				↔
1E	30				▲
1F	31				▼
20	32	Space	Space	Space	Space
21	33	!	!	!	!
22	34	"	"	"	"
23	35	#	#	#	#
24	36	$	$	$	$
25	37	%	%	%	%
26	38	&	&	&	&
27	39	'	'	'	'
28	40	(	(	(	(
29	41	)	)	)	)
2A	42	*	*	*	*
2B	43	+	+	+	+
2C	44	,	,	,	,
2D	45	-	-	-	-
2D	46	.	.	.	.
2F	47	/	/	/	/
30	48	0	0	0	0
31	49	1	1	1	1
32	50	2	2	2	2
33	51	3	3	3	3
34	52	4	4	4	4
35	53	5	5	5	5
36	54	6	6	6	6
37	55	7	7	7	7
38	56	8	8	8	8
39	57	9	9	9	9
3A	58	:	:	:	:
3B	59	;	;	;	;
3C	60	<	<	<	<
3D	61	=	=	=	=
3E	62	>	>	>	>
3F	63	?	?	?	?
40	64	@	@	@	@
41	65	A	A	A	A

Hex.	Dec.	Epson Sets 1 & 2	IBM Set 1	IBM Set 2	IBM Set 3
42	66	B	B	B	B
43	67	C	C	C	C
44	68	D	D	D	D
45	69	E	E	E	E
46	70	F	F	F	F
47	71	G	G	G	G
48	72	H	H	H	H
49	73	I	I	I	I
4A	74	J	J	J	J
4B	75	K	K	K	K
4C	76	L	L	L	L
4D	77	M	M	M	M
4E	78	N	N	N	N
4F	79	O	O	O	O
50	80	P	P	P	P
51	81	Q	Q	Q	Q
52	82	R	R	R	R
53	83	S	S	S	S
54	84	T	T	T	T
55	85	U	U	U	U
56	86	V	V	V	V
57	87	W	W	W	W
58	88	X	X	X	X
59	89	Y	Y	Y	Y
5A	90	Z	Z	Z	Z
5B	91	[	[	[	[
5C	92	\	\	\	\
5D	93	]	]	]	]
5E	94	^	^	^	^
5F	95	_	_	_	_
60	96	`	`	`	`

Hex.	Dec.	Epson Sets 1 & 2	IBM Set 1	IBM Set 2	IBM Set 3
61	97	a	a	a	a
62	98	b	b	b	b
63	99	c	c	c	c
64	100	d	d	d	d
65	101	e	e	e	e
66	102	f	f	f	f
67	103	g	g	g	g
68	104	h	h	h	h
69	105	i	i	i	i
6A	106	j	j	j	j
6B	107	k	k	k	k
6C	108	l	l	l	l
6D	109	m	m	m	m
6E	110	n	n	n	n
6F	111	o	o	o	o
70	112	p	p	p	p
71	113	q	q	q	q
72	114	r	r	r	r
73	115	s	s	s	s
74	116	t	t	t	t
75	117	u	u	u	u
76	118	v	v	v	v
77	119	w	w	w	w
78	120	x	x	x	x
79	121	y	y	y	y
7A	122	z	z	z	z
7B	123	{	{	{	{
7C	124							
7D	125	}	}	}	}
7E	126	~	~	~	~
7F	127	DEL	DEL	DEL	⌂

		Epson Set		IBM Set	
Hex.	Dec.	1	2	1	2 & 3
80	128		Ç	NUL	Ç
81	129		ü		ü
82	130		é		é
83	131		â		â
84	132		ä		ä
85	133		à		à
86	134		å		å
87	135	BEL	ç	BEL	ç
88	136	BS	ê	BS	ê
89	137	HT	ë	HT	ë
8A	138	LF	è	LF	è
8B	139	VT	ï	VT	ï
8C	140	FF	î	FF	î
8D	141	CR	ì	CR	ì
8E	142	SO	Ä	SO	Ä
8F	143	SI	Å	SI	Å
90	144		É		É
91	145	DC1	æ	DC1	æ
92	146	DC2	Æ	DC2	Æ
93	147	DC3	ô		ô
94	148	DC4	ö	DC4	ö
95	149		ò		ò
96	150		û		û
97	151		ù		ù
98	152	CAN	ÿ	CAN	ÿ
99	153	EM	Ö	EM	Ö
9a	154		Ü		Ü
9B	155	ESC	¢	ESC	¢
9C	156		£		£
9D	157		¥		¥
9E	158		₧		₧
9F	159		ƒ		ƒ
A0	160	Space	á	á	á

		Epson Set		IBM Set	
Hex.	Dec.	1	2	1	2 & 3
A1	161	!	á	á	á
A2	162	"	í	í	í
A3	163	#	ó	ó	ó
A4	164	$	ñ	ñ	ñ
A5	165	%	Ñ	Ñ	Ñ
A6	166	&	ª	ª	ª
A7	167	'	º	º	º
A8	168	(	¿	¿	¿
A9	169	)	⌐	⌐	⌐
AA	170	*	¬	¬	¬
AB	171	+	½	½	½
AC	172	,	¼	¼	¼
AD	173	-	¡	¡	¡
AE	174	.	«	«	«
AF	175	/	»	»	»
B0	176	0	▒	▒	▒
B1	177	1	▓	▓	▓
B2	178	2	█	█	█
B3	179	3	│	│	│
B4	180	4	┤	┤	┤
B5	181	5	╡	╡	╡
B6	182	6	╢	╢	╢
B7	183	7	╖	╖	╖
B8	184	8	╕	╕	╕
B9	185	9	╣	╣	╣
BA	186	:	║	║	║
BB	187	;	╗	╗	╗
BC	188	<	╝	╝	╝
BD	189	=	╜	╜	╜
BE	190	>	╛	╛	╛
BF	191	?	┐	┐	┐
C0	192	@	└	└	└
C1	193	A	┴	┴	┴

		Epson Set		IBM Set	
Hex.	Dec.	1	2	1	2 & 3
C2	194	B	┬	┬	┬
C3	195	C	├	├	├
C4	196	D	─	─	─
C5	197	E	┼	┼	┼
C6	198	F	╞	╞	╞
C7	199	G	╟	╟	╟
C8	200	H	╚	╚	╚
C9	201	I	╔	╔	╔
CA	202	J	╩	╩	╩
CB	203	K	╦	╦	╦
CC	204	L	╠	╠	╠
CD	205	M	═	═	═
CE	206	N	╬	╬	╬
CF	207	O	╧	╧	╧
D0	208	P	╨	╨	╨
D1	209	Q	╤	╤	╤
D2	210	R	╥	╥	╥
D3	211	S	╙	╙	╙
D4	212	T	╘	╘	╘
D5	213	U	╒	╒	╒
D6	214	V	╓	╓	╓
D7	215	W	╫	╫	╫
D8	216	X	╪	╪	╪
D9	217	Y	┘	┘	┘
DA	218	Z	┌	┌	┌
DB	219	[	█	█	█
DC	220	\	▄	▄	▄
DD	221	]	▌	▌	▌
DE	222	^	▐	▐	▐
DF	223	_	▀	▀	▀
E0	224	`	α	α	α

		Epson Set		IBM Set	
Hex.	Dec.	1	2	1	2 & 3
E1	225	a	β	β	β
E2	226	b	Γ	Γ	Γ
E3	227	c	π	π	π
E4	228	d	Σ	Σ	Σ
E5	229	e	σ	σ	σ
E6	230	f	μ	μ	μ
E7	231	g	τ	τ	τ
E8	232	h	Φ	Φ	Φ
E9	233	i	Θ	Θ	Θ
EA	234	j	Ω	Ω	Ω
EB	235	k	δ	δ	δ
EC	236	l	∞	∞	∞
ED	237	m	φ	φ	φ
EE	238	n	ε	ε	ε
EF	239	o	∩	∩	∩
F0	240	p	≡	≡	≡
F1	241	q	±	±	±
F2	242	r	≥	≥	≥
F3	243	s	≤	≤	≤
F4	244	t	⌠	⌠	⌠
F5	245	u	⌡	⌡	⌡
F6	246	v	÷	÷	÷
F7	247	w	≈	≈	≈
F8	248	x	°	°	°
F9	249	y	•	•	•
FA	250	z	·	·	·
FB	251	{	√	√	√
FC	252	|	η	η	η
FD	253	}	^{2}	^{2}	^{2}
FE	254	~	■	■	■
FF	255	DEL	Space	Space	Space

Code Page

USA

Canada French

Multilingual

Portugal

Norway

BRASCII

Abicomp

```
Ø  ►      0  @  P  `  p            Ò  |  ò
⊕  ◄  !  1  A  Q  a  q      À  Ó  à  ó
●  ↕  "  2  B  R  b  r      Á  Ô  á  ô
♥  ‼  #  3  C  S  c  s      Â  Õ  â  õ
♦  ¶  $  4  D  T  d  t      Ã  Ö  ã  ö
♣  §  %  5  E  U  e  u      Ä  Œ  ä  œ
♠  ▬  &  6  F  V  f  v      Ç  Ù  ç  ù
●  ↨  '  7  G  W  g  w      È  Ú  è  ú
◘  ↑  (  8  H  X  h  x      É  Û  é  û
○  ↓  )  9  I  Y  i  y      Ê  Ü  ê  ü
■  →  *  :  J  Z  j  z      Ë  Ÿ  ë  ÿ
♂  ←  +  ;  K  [  k  {      Ì  ¨  ì  ß
♀  ⌐  ,  <  L  \  l  |      Í  £  í  ª
♪  ↔  -  =  M  ]  m  }      Î  ·  î  º
♫  ▲  .  >  N  ^  n  ~      Ï  §  ï  ¿
☼  ▼  /  ?  O  _  o  ⌂      Ñ  °  ñ  ±
```

Multilingual 858

```
   ►      0  @  P  `  p  Ç  É  á  ░  └  ð  Ó  ─
⊕  ◄  !  1  A  Q  a  q  ü  æ  í  ▒  ┴  Ð  ß  ±
●  ↕  "  2  B  R  b  r  é  Æ  ó  ▓  ┬  Ê  Ô  ▬
♥  ‼  #  3  C  S  c  s  â  ô  ú  │  ├  Ë  Ò  ¾
♦  ¶  $  4  D  T  d  t  ä  ö  ñ  ┤  ─  È  õ  ¶
♣  §  %  5  E  U  e  u  à  ò  Ñ  Á  ┼  €  Õ  §
♠  ▬  &  6  F  V  f  v  å  û  ª  Â  ã  Í  µ  ÷
●  ↨  '  7  G  W  g  w  ç  ù  º  À  Ã  Î  þ  ¸
◘  ↑  (  8  H  X  h  x  ê  ÿ  ¿  ©  ╚  Ï  Þ  °
○  ↓  )  9  I  Y  i  y  ë  Ö  ®  ╣  ╔  ⌐  Ú  ¨
■  →  *  :  J  Z  j  z  è  Ü  ¬  ║  ╩  ¬  Û  ·
♂  ←  +  ;  K  [  k  {  ï  ø  ½  ╗  ╦  ½  Ù  ¹
♀  ⌐  ,  <  L  \  l  |  î  £  ¼  ╝  ╠  ¡  Ý  ³
♪  ↔  -  =  M  ]  m  }  ì  Ø  ¡  ¢  ═  ┐  ¥  ²
♫  ▲  .  >  N  ^  n  ~  Ä  ×  «  ¥  ╬  │  ì  ■
☼  ▼  /  ?  O  _  o  ⌂  Å  ƒ  »  ┐  ¤  └  ■  ´
```

ISO 8859-15

```
        0  @  P  `  p        °  À  Ð  à  ð
   !  1  A  Q  a  q  ¡  ±  Á  Ñ  á  ñ
   "  2  B  R  b  r  ¢  ²  Â  Ò  â  ò
   #  3  C  S  c  s  £  ³  Ã  Ó  ã  ó
   $  4  D  T  d  t  €  Ž  Ä  Ô  ä  ô
   %  5  E  U  e  u  ¥  µ  Å  Õ  å  õ
   &  6  F  V  f  v  Š  ¶  Æ  Ö  æ  ö
   '  7  G  W  g  w  §  ·  Ç  ×  ç  ÷
   (  8  H  X  h  x  š  ž  È  Ø  è  ø
   )  9  I  Y  i  y  ©  ¹  É  Ù  é  ù
   *  :  J  Z  j  z  ª  º  Ê  Ú  ê  ú
   +  ;  K  [  k  {  «  »  Ë  Û  ë  û
   ,  <  L  \  l  |  ¬  Œ  Ì  Ü  ì  ü
   -  =  M  ]  m  }  -  œ  Í  Ý  í  ý
   .  >  N  ^  n  ~  ®  Ÿ  Î  Þ  î  þ
   /  ?  O  _  o     ¯  ¿  Ï  ß  ï  ÿ
```

Appendix F: Interfacing

This appendix gives the pin assignments for the parallel interface and Universal Serial Bus (USB). It also explains how to install the optional Serial Interface Board and gives the pin assignments for the serial interface.

Pin Assignments for Parallel Interface Signals

Pin	Signal	Return Pin	Direction
1	Strobe	19	To Printer
2	Data 1	20	To Printer
3	Data 2	21	To Printer
4	Data 3	22	To Printer
5	Data 4	23	To Printer
6	Data 5	24	To Printer
7	Data 6	25	To Printer
8	Data 7	26	To Printer
9	Data 8	27	To Printer
10	Acknowledge	28	From Printer
11	Busy	29	From Printer
12	Paper End	30	From Printer
13	Select	No Return	From Printer
14	Auto Feed		To Printer
15	Not used		
16	0V	No Return	Signal Ground
17	Chassis Ground	No Return	Frame Ground
18	+5V *		From Printer
19-30	0V		Ground
31	Input Prime		To Printer
32	Fault		From Printer
33	0V		Signal Ground
34	Not used		
35	Not used		High Level
36	Select In		To Printer

*   1.2 mA maximum

Universal Serial Bus (USB)

Universal Serial Bus Specification Revision 1.1 compliance.

1. Connector
   - Printer Side: "B" Receptacle (Upstream Input to the USB Device)
   - Cable Side: Series "B" Plug

2. Cable
   - Cable Lenght: Max 5 m (A cable must be met USB Spec Rev 1.1 for normal operation)

   ***Note:*** Cable is not provided.

3. Table of USB I/F signals

| Contact Number	Signal Name
1	Vbus (Not Used)
2	D–
3	D+
4	GND
Sell	Shield

4. Connector pin arrangement
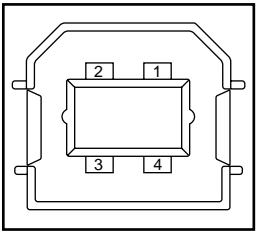
Installing the Serial Interface

Caution! Handle the interface board with care to avoid damaging its components. The components can also be damaged by static discharges. We recommend that you leave the board in its protective packaging until you've read these instructions and are ready to install it. Make sure the printer is unplugged before you install the board.

Parallel port
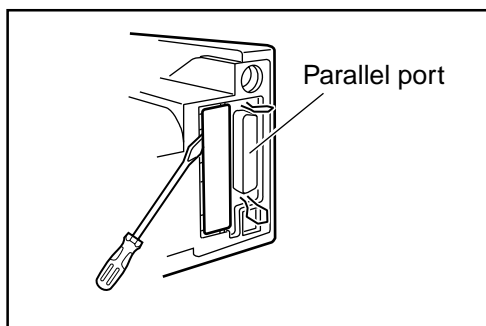
1. Remove plastic covering over opening for serial board in back panel:.
    – insert tip of flat-blade screwdriver at top and twist it to snap plastic molding holding cover in place.
    – repeat procedure for molding at bottom of cover
    – press inward on cover with your fingers and bend it back and forth until it snaps off.

Component side of board
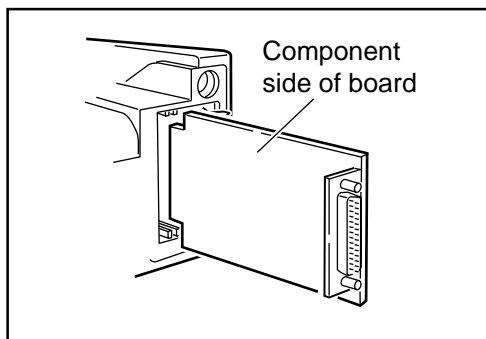
2. Holding board by cable connector, with components facing away from parallel interface, gently slide it into opening against guides at top and bottom. Press firmly into place.
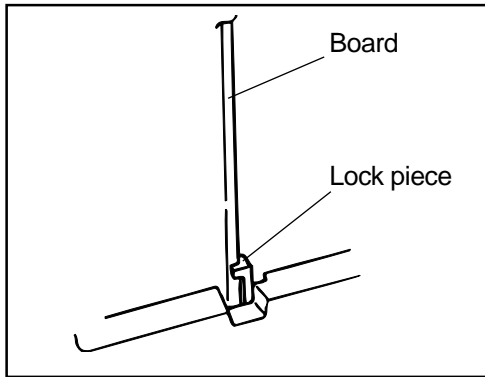
3. By inserting board to the far end, it is locked by the lock piece inside.

4. Connect suitable interface cable (must be purchased separately) to printer connector and to serial port of your computer. Be sure to tighten screws on both ends of cable to keep it in place.

Important! Make sure that you do not have a parallel cable connected to the printer when you're using the serial interface. You can switch to the parallel interface without removing the serial board, but *only one cable can be attached at a time.*

When the serial interface is installed, the "Serial I/F" portion of the Menu will become active (see page 73).

Pin Assignments for Serial Interface Signals

Pin	Signal	Symbol	Direction
1	Protective Ground	PG	
2	Transmitted Data	TD	From Printer
3	Received Data	RD	To Printer
4	Request to Send	RTS	From Printer
5	Not used		
6	Data Set Ready	DSR	To Printer
7	Signal Ground	SG	
8-10	Not Used		
11	Supervisory Send Data	SSD	From Printer
12-19	Not Used		
20	Data Terminal Ready	DTR	From Printer
21-25	Not Used		

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